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ABSTRACT

The design and operational characteristics of an individualized course development model are detailed in this second volume composed of appendixes to EM 010 418 (see also Part One of the Final Report, EM 010 434). The volume contains an index to technical reports and papers, an index for product tree, course outlines, a list of original terminal objectives, a hierarchical structure of content outline, a student questionnaire, a program frame answer sheet, a progress check answer and remedication form, a description of the depth core unit, a test for writers and editors, a list of product task competencies, general rules for programmed instruction, a manual of style, an extract of research specifications to the writers, terminal and enabling objectives for the content, a content bibliography, systems flow charts, and revision materials. EM 010 420 through EM 010 447, and EM 010 451 through EM 010 512 are related documents. (SH)

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UNITED STATES NAVAL ACADEMY

INTRODUCTION TO PSYCHOLOGY AND LEADERSHIP

T.R. 6-19
20 May 1971

FINAL REPORT
PART TWO
VOLUME TWO

Contract No. N00600-68-C-1525

EM 010 419

Westinghouse Learning Corporation
Annapolis Division
2083 West Street
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20 May 1971

ED 071277

DESIGN AND OPERATIONAL CHARACTERISTICS OF AN INDIVIDUALIZED COURSE DEVELOPMENT MODEL

FINAL REPORT

PART TWO

VOLUME TWO

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May 1971

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APPENDIX A.

TECHNICAL REPORTS AND PAPERS

Technical Reports

TR-6.1c	Content Outline for Leadership Course	October 7, 1968
TR-6.2	Leadership Course - Phase I Terminal Objectives	November 11, 1968
TR-6.3a	Research and Evaluation Plan Part I	January 31, 1969
TR-6.3a	Leadership Management Course Part II	May 9, 1969
TR-6.4a	Instructional Presentation Design	August 6, 1969
TR-6.5	Student Guide	January 24, 1970
TR-6.6	Instructor Guide	January 22, 1970
TR-6.10	Computer Programs and Specifications	May 26, 1969
TR-6.11	An Analysis and Evaluation of Instructional Methodology For A Multi-Media Course in Leadership, Psychology, and Management Phase II Evaluation Report	October 15, 1970
TR-6.12a	Report of Phase II Research Findings: The Design and Methodology For Research On The Interaction Of Media, Conditions of Instruction, and Student Characteristics For A Multi-Media Course in Leadership, Psychology and Management Part I: Conditions of Instruction	October 15, 1970
TR-6.12b	Report of Phase II Research Findings: The Design and Methodology For Research On The Interaction Of Media, Conditions of Instruction, and Student Characteristics For A Multi-Media Course in Leadership, Psychology and Management Part II: Student Characteristics	December, 1970
TR-6.13	Design Specifications Document Including Specifications For Product And Course Design System Management and Evaluation Procedures	February, 1971

(Copies of these documents are maintained in the office of the Director, Academic Computing Center.)

TR-6.14	Cost Effectiveness	April 30, 1971
TR-6.15	An Analysis and Evaluation of Instructional Methodology For A Multi-Media Course in Leadership, Psychology, and Management Phase III Evaluation Report	May 1, 1971
TR-6.16	Report of Phase III Research Findings; For A Multi-Media Course in Leadership, Psychology and Management	May 26, 1971
TR-6.17	Management Design: Procedures for Administration of a Multi-Media, Individualized Course in Leadership, Psychology and Management	May 26, 1971
TR-6.18	Final Report - Part I Summary and Recommendations On A Multi-Media Instructional System for Leadership, Psychology and Management	May 26, 1971
TR-6.19	Final Report - Part II Multi-Media Course Development Model	May 26, 1971

Technical Papers

TP-6.1	A Behavioral Approach to Instructional Design and Media Selection	Septemner 23, 1968
TP-6.2	Sequencing Rationale	March 19, 1969
TP-6.3	Course Description	November 18, 1968
TP-6.4	Course Strategy	March 21, 1969
TP-6.5	Cost Effectiveness	March 7, 1969
TP-6.6	Course Development Model for Phase I	March 28, 1969
TP-6.7	Application of PERT to Research and Development in Education	May 16, 1969
TP-6.8	Typological Analysis of Student Characteristics: Preliminary Report	September 15, 1969
TP-6.9	Specifications of Research Test Items	December 9, 1969
TP-6.10	Rank-Biserial Correlation as an Item Discrimination	May 11, 1970

APPENDIX B.

INDEX FOR PRODUCT TREE

Following is an annotated list of the products identified in Figure 1 with arbitrary identification numbers cited for each. Those about which the observation team were able to obtain significant data, by suitable interrogation of people on the project whose tasks involved the generation of these products, are identified by the word "data".

P-01. *Original Course Segments from Academy*. This was the material analyzed as a starting point for developing new material.

P-02. *Terminal Objectives for Course Segments*. These were developed and revised, for each segment within the course. (data)

P-03. *Enabling Objectives for Course Segments*. These were built from course content outline. (data)

P-04. *Content Outlines for Course Segments*. Involves the determination of content and sequence within each segment. (data)

P-05. *Syndactic Text Modules for Course*. These are multi-level texts built in printed format around the content map. (data)

P-06. *Syndactic Text Modules with Remediation*. These are identical to correspondingly numbered item within Product 05, except that remediation is provided, and they are relevant to the responses made by the student. Product 05 does not provide this relevance.

P-07. *Single Concept Films*. Mostly for use with depth core segments (Product 27), these elements form the basis for discussion exercise. (data)

P-08. Video Tape Modules. Used for presentation of lectures on video tape, these are in identical format with other modules of same segment for the core. (data)

P-09. Audio Tape Modules. These are used for presentation of lectures on audio tape, in which the visual data (charts, pictures, etc.,) presented on video are provided by panel books (Product 10). (data)

P-10. Panel Books. These are books containing the visual necessary to accompany lectures presented by audio tape.

P-11. Learner Activity Summary. A planned discussion session at the conclusion of a part of the course.

P-12. Computer-Aided Instruction (CAI) Modules. These are computer-programmed instructional modules to correspond with those using other media for the same segments. (data)

P-13. Linear Programmed Modules. These are course content segments presented in linear programming mode. (data)

P-14. Intrinsically Programmed Modules. These texts are designed on intrinsically programming principles. (data)

P-15. Research Design Experiments. These were five experiments designed to obtain simultaneous data on selected variables.

P-16. Overall Research Design and Evaluation Plan. A design and evaluation plan with the objective of providing information that will enable better utilization of respective media as a result. (data)

P-17. Instructional Presentation Design. An arrangement for presenting the units of the course to optimize research and instruction value. (data)

P-18. Major Parts of Core. These are 12 groups of segments on the major subject elements of the course.

P-19. Criterion Referenced Test Pool. This includes approximately 1500 test items.

P-20. Norm Referenced Test Pool. This includes approximately 600 test items.

P-21. Segments of Core. One or more (as many as six) modules carrying identical content in different presentations for testing various parameters of presentation.

P-22. Progress Checks. These are applied to the student after each module (or segment) with a view to determining his readiness for proceeding to the next segment (module). (data)

P-23. Cumulative Post Tests. These tests are applied at the beginning of the course and after each part (13 in all) to assess student's learning at each major break in subject matter.

P-24. Student Data File. This provides a means of monitoring individual student progress and data each student provides as research input. (data)

P-25. Student/Instructor Use Guide. A manual for use by students and instructors respectively as a guide for use of instructional material. (data)

P-26. Course Development Model. The model for development based on original input with planned improvements and needs for instruction and research purposes. (data)

P-27. Depth Core Segments. These are various segments provided to deepen the impression and help the student apply the basic information learned in the core segments.

P-28. Master Tutor Modules. Multi-track (4-track, in this instance) audio tape programmed to duplicate intrinsic programmed units on tape. (data)

P-29. Structural Communication Module. Another form of depth and/or enrichment unit, utilizing situation problem with matrixed response choice, linked to programmed instruction that enables the student to pursue his own course until he completely covers the available information within the unit. (data)

P-30. CBI70 Modules. An intrinsic programmed system, utilizing 6-track sound film, presented on a CBI70 (Computer-Based Instruction) machine. (data)

P-31. Enrichment Units. These units utilize one of the types of module in Products 28-30 to provide enrichment.

P-32. Research Findings. The compiled results from the data collected in research.

P-33. New Course for Academy. The ultimate text and lesson plans, etc., for continued use, after the experiment is completed, at the Academy.

P-34. Reports for Various Agencies. These are technical and milestone reports (see Figure 2), including the terminal report.

P-42. Content Map. This is an integral part, as well as an organization tool, in producing each part of the course, showing the sequence and/or ordering of the segments within that part. (data)

APPENDIX C.

COURSE OUTLINES

COURSE OUTLINE I

1.0 CHARACTERISTICS OF INDIVIDUAL AND GROUP BEHAVIOR

- 1.1 Science and Technology
  - 1.1.1 Definition of Science
  - 1.1.2 Definition of Technology
  - 1.1.3 Cause and Effect Relationships
- 1.2 Psychology as Science
  - 1.2.1 Definition
  - 1.2.2 Roots of Psychology
  - 1.2.3 Branches of Psychology
  - 1.2.4 Experimental Method
  - 1.2.5 Psychological Warfare
  - 1.2.6 Determiners of Development
  - 1.2.7 Mechanisms of Development
- 1.3 Behavior
  - 1.3.1 Overview
  - 1.3.2 Personality
  - 1.3.3 Stimulus and Response
  - 1.3.4 Behavioral Observation
- 1.4 Laws of Behavior
  - 1.4.1 Consequences of Behavior
  - 1.4.2 Contiguity

2.0 SELF-DIRECTION, SELF-MOTIVATION, SELF-CONTROL, IMAGE
  2.1 Naval Expectations........................
    2.1.1 Tradition........................
    2.1.2 Customs........................
    2.1.3 Regulations........................
    2.1.4 Standards of Performance............
  2.2 Self-Expectation........................
    2.2.1 Self-Evaluation....................
    2.2.2 Self-Image........................
    2.2.3 Building your Self-Image...........
    2.2.4 Self-Control........................
  2.3 Attaining Goals........................
    2.3.1 Peer Monitoring....................
    2.3.2 Establishing Priorities............
    2.3.3 Self-Motivational Techniques........
    2.3.4 Elimination of Bad Habits...........
  2.4 Setting Goals for Yourself................
    2.4.1 Attainable........................
    2.4.2 Definable........................
    2.4.3 Valuable........................
3.0 SUPERVISION AND MOTIVATION OF SUBORDINATES......
  3.1 Leadership and Supervision................
    3.1.1 Introductory Discussion.............
    3.1.2 Navy's Concept....................

3.2 Leadership Psychology Research..............
  3.2.1 Theories..........................
  3.2.2 Studies...........................
  3.2.3 Categories of Leadership............
3.3 Procedures for Motivating Subordinates......
  3.3.1 Communicating Objectives............
  3.3.2 Establishing Credibility............
  3.3.3 Developing a Sense of Participation..
  3.3.4 Checking Progress...................
  3.3.5 Providing Relevant Information.......
  3.3.6 Providing Consequences..............
  3.3.7 Providing Material and Support.......
  3.3.8 Establishing and Maintaining Group Norms........................
  3.3.9 Following-Up........................
4.0 DISCIPLINE AND MORALE........................
  4.1 The Concept of Discipline..................
    4.1.1 Self-Discipline....................
    4.1.2 Rationale..........................
    4.1.3 Techniques.........................
  4.2 The Concept of Morale......................
    4.2.1 Measuring Morale...................
    4.2.2 Rationale..........................
    4.2.3 Techniques.........................

5.0 RELATIONS WITH SUPERIORS AND PEERS..............
    5.1 Formal................................
        5.1.1 Tradition........................
        5.1.2 Customs..........................
        5.1.3 Low..............................
    5.2 Informal..............................
        5.2.1 Common Sense.....................
        5.2.2 Sensitivity......................
    5.3 Rationale.............................
        5.3.1 Avoid Unnecessary Friction.........
        5.3.2 Maintain Credibility...............
        5.3.3 Maintain Morale with Enlisted Men....
        5.3.4 Facilitates Communication..........
    5.4 Techniques............................
        5.4.1 Know Naval Laws, Traditions and Customs........................
        5.4.2 Conform to Military Code of Conduct..
        5.4.3 Conflict Situations................
        5.4.4 Cooperation and Enlisting Support....
6.0 ORGANIZATION, SELECTION AND ADMINISTRATION.......
    6.1 Management - An Overview..................
        6.1.1 Definition.......................
        6.1.2 The Importance of Management........
        6.1.3 Evolution of Scientific Management...

- 6.2 Organization
  - 6.2.1 Definition
  - 6.2.2 Principles of Organization
- 6.3 Selection
  - 6.3.1 Psychological Factors
  - 6.3.2 Psychometrics
- 6.4 Administration
  - 6.4.1 Planning
  - 6.4.2 Implementation
- 6.5 Decision Making and Problem Solving
  - 6.5.1 Steps
  - 6.5.2 Creativity

7.0 COMMUNICATIONS, COUNSELING AND PERSONAL RELATIONS

- 7.1 Models of Communication and Communication
  - 7.1.1 Shannon and Weaver Model
  - 7.1.2 Berlo Model (SMCR)
  - 7.1.3 Naval Chain of Command
  - 7.1.4 Communication Breakdowns
- 7.2 Types of Communication
  - 7.2.1 Oral
  - 7.2.2 Written
  - 7.2.3 Non-Verbal or Non-Written
  - 7.2.4 The Grapevine

- 7.3 Personal Relations..........................
  - 7.3.1 Involvement with Subordinate's Personal Lives......................
  - 7.3.2 Social Functions....................
- 7.4 Counseling..............................
  - 7.4.1 Effective Techniques................
  - 7.4.2 Sensitivity to Others...............
  - 7.4.3 Types of Problems...................

8.0 TRAINING AND GUIDANCE.........................

- 8.1 Learning................................
  - 8.1.1 Kinds of Learning...................
  - 8.1.2 Measuring Learning..................
- 8.2 Factors Effecting Learning..............
  - 8.2.1 Motivation..........................
  - 8.2.2 Previous Learning...................
  - 8.2.3 Practice............................

COURSE OUTLINE II

LEADERSHIP

A sequenced topical course outline of required demonstrable behavior based on the film script of General Order No. 21, MN-8829A1; and the 41 critical behavior categories contained in the publication NAVPERS 92224A.

Chapter 1 - Parameters of Leadership

1. The objective of General Order No. 21 is to achieve an improving state of combat readiness by emphasizing successful leadership. (G-1)

2. Leadership is based on personal example, moral responsibility, and good management. The leader lives up to the ideals that are inherent in Navy life. (G-2)

3. The leader's objective is to accomplish the Navy's mission through people. (G-3)

4. A good leader has integrity. (G-7)

5. A good leader performs his duties not because he is forced to but because it is a matter of personal integrity to do so. (G-19)

6. A good leader must be able to discipline himself. (G-9)

7. A good leader sets an example of good behavior and performance. (G-6)

8. A good leader complies with standards of readiness, safety, efficiency, and economy; maintains high standards of personal appearance; sees that drills, work periods, and watches begin on time and are performed with smartness and dispatch. He also sees that advancement in rate objectives are met as well as insuring participation in non-military programs. (G-21)

9. A good leader is prepared for emergency and acts instinctively in times of stress. (G-16)

10. A good leader is brave. (G-8)

11. A good leader remains calm and composed under pressure. (N-19)

12. A good leader meets personal commitments promptly and fully. (N-36)

13. A good leader accepts the responsibility for his own work and his own decisions. (N-34)

14. The good leader completes assigned work on schedule in spite of possible personal distaste for the work, or personal inconvenience. (N-30)

15. A good moral climate exists when transfers are few, court martials are reduced, and maximum precautions are taken to avoid accidents. (G-22)

16. Leadership quality should be constantly reviewed and improved. (G-5)

Chapter 2 - The Responsibilities of Leadership

17. A good leader recognizes that his behavior affects those around him. (G-17)

18. A good leader maintains the chain of command. (G-13)

19. A good leader supports the policies and actions of superiors and associates, both to them and when dealing with his subordinates. (N-14)

20. The good leader complies with decisions, orders, and directives of his superiors, (N-20) and begins work as promptly as possible following assignment. (N-37)

21. A good leader shows no resentment to criticisms or suggestions. (N-13)

22. A good leader carries out each assignment to the letter regardless of its nature, (G-11) and is morally responsible for all aspects of performance by his men. (G-18)

Chapter 3 - Planning for Mission Accomplishment

23. A good leader sets short and long-range goals and makes definite plans to reach these goals. (G-30)

24. The good leader plans detailed aspects of the procedures necessary to accomplish his assignment. He considers various alternative approaches and their probable consequences. (N-22)

25. The good leader seeks out sources of information with which to instruct himself in those skills necessary for his attaining good performance on his job. (N-41)

26. The good leader coordinates with appropriate units and personnel prior to, and during planning. (N-23)

27. The good leader substantiates suggested course of action with facts. (N-40)

28. A good leader seeks to economize in the use of men and material as well as money. (The planning for this accomplishment must be made during the planning stage.) (G-31)

29. The good leader protects and conserves Navy equipment and supplies as well as ethically disposing of same. (N-29)

30. A good leader seeks ways to reduce accidents and improve methods for caring for modern equipment. (G-29)

31. A good leader must know his job and perform it well. (G-10)

32. The good leader takes his own share of undesirable duty. (N-31)

33. The good leader performs additional work voluntarily when necessary to meet deadlines or avoid delay. (N-32)

34. The good leader takes the responsibility for completion of all necessary work in absence of supervisor. (N-33)

Chapter 4 - Organizing for Mission Accomplishment

35. A good leader helps every man under his command see the relation between the humblest chore and the overall objective of Naval operations. (G-20)

36. The good leader schedules work, and allocates his own time and that of his personnel after consideration of all important factors. (N-24)

37. The good leader considers capability and experience, rather than availability only, in assigning responsibility for tasks. (N-25)

38. A good leader assigns responsibility for specific tasks to subordinates, and delegates to them the necessary authority to carry out the tasks. (N-1)

39. A good leader puts the right man in the right job and cross trains to allow for under staffing. (G-26)

Chapter 5 - The Leader as a Director of Operations

40. A good leader states orders clearly to insure understanding. (G-15)

41. The good leader gives orders or directions in an authoritative and consistent manner. (N-4)

42. A good leader gives clear and complete instructions, including all essential points, explaining and illustrating in detail; and determines that instructions are understood. (N-2)

43. The good leader gives reasons for actions and decisions, or for existing situation or assignment, or for changes in plans or rules. He explains the importance of the job or assignment. (N-3)

44. The good leader considers fact rather than personal prejudice or expediency in decisions and actions involving subordinates. (N-10)

45. A leader must inspire and manage groups of people. (G-4)

46. A good leader conducts operations efficiently and professionally. (G-12)

47. A good leader encourages teamwork. (G-28)

48. The good leader displays confidence in the ability of his subordinates to accomplish the task. (N-6)

Chapter 6 - The Controlling and Monitoring Aspects of Leadership

49. A good leader sets a high standard of accomplishment and provides a system of supervision and checks to see that the standard is adhered to. (G-27)

50. The good leader keeps accurate and up-to-date records. (N-39)

51. A good leader checks on the accuracy of his own and other's work or information. (N-38)

52. A good leader offers constructive suggestions for improvement of work, shows interest in subordinates' work, discusses problem areas, and checks progress periodically or at crucial points. (N-8)

53. The good leader makes decision promptly when responsible for action. (N-27)

54. The good leader follows through on his decisions promptly and precisely. (N-28)

55. The good leader takes appropriate steps to solve unexpected problems arising during the course of his assignment. (N-26)

56. The good leader assists others, or performs work of others, when necessary to meet deadlines or avoid delay. (N-15)

57. The good leader keeps appropriate persons informed on progress and relevant information. (N-12)

58. A good leader presents complete information, both favorable and unfavorable to himself. (N-35)

Chapter 7 - Securing the Support of Subordinates

59. When the leader is concerned about the welfare of his men, his men are concerned about the welfare of the Navy. (G-25)

60. A good leader shows interest in the welfare and morale of his subordinates. (N-16)

61. The good leader takes responsibility for the fair treatment of subordinates. (N-17)

62. A good leader makes himself available to his subordinates. (G-14)

63. The good leader considers and discusses ideas and suggestions of others. (N-9)

64. A good leader accepts responsibility for the actions of his subordinates. (N-18)

65. A good leader withholds judgment in personnel matters until he has sufficient facts. (N-11)

66. The good leader gives credit or reprimands to appropriate persons. (N-21)

67. A good leader administers reprimand or disciplinary action in a constructive manner. (N-5)

68. A good leader rewards subordinates when particularly deserved with praise or recommendation for promotion. (N-7)

69. A good leader gives timely and appropriate recognition for personal achievement and exceptional performance. (G-24)

70. A good leader provides recreational facilities and anticipates the granting of liberty opportunities. (G-23)

Chapter 8 - The Requirements of Good Leadership

71. The objective of General Order No. 21 is to achieve an improving state of combat readiness by emphasizing successful leadership. (G-1)

72. Leadership is based on personal example, moral responsibility, and good management. The leader lives up to the ideals that are inherent in Navy life. (G-2)

73. The leader's objective is to accomplish the Navy's mission through people. (G-3)

74. The good leader has integrity (G-7) and performs his duties not because he is forced to but because it is a matter of personal integrity to do so. (G-19)

75. A good leader must be able to discipline himself (G-9) and he sets an example of good behavior and performance. (G-6)

76. A good leader complies with standards of readiness, safety, efficiency, and economy; maintains high standards of personal appearance; sees that drills, work periods, and watches begin on time and are performed with smartness and dispatch. He also sees that advancement in rate objectives are met as well as insuring participation in non-military programs. (G-21)

77. A good leader is brave (G-8), remains calm and composed under pressure (N-19), and is prepared for emergencies and acts instinctively in times of stress. (G-16)

78. A good leader meets personal commitments promptly and fully. (N-36)

79. The good leader completes assigned work on schedule in spite of possible personal distaste for the work, or personal inconvenience (N-30), and accepts the responsibility for his own work and his own decisions. (N-34)

80. A good moral climate exists when transfers are few, court martials are reduced, and maximum precautions are taken to avoid accidents. (G-22)

81. Leadership quality should be constantly reviewed and improved. (G-5)

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COURSE OUTLINE III

Part and Segment Number	Content Heading
	PART ONE: OVERVIEW OF LEADERSHIP
1.1	Concepts of Leadership
1.2	Standards of Leadership in the Naval Service
	PART TWO: INDIVIDUAL BEHAVIOR
2.1	Introduction to Psychology
2.2	Behavior and Its Observation
2.3	Learning
2.4	Factors Affecting Learning
2.5	Attention and Perception
2.6	Motivation
2.7	Conflict
2.8	Neurotic and Psychotic Reactions
2.9	Personality
	PART THREE: GROUP DYNAMICS
3.1	Characteristics of Groups
3.2	The Relationship of the Leader to the Group
3.3	Group Interactions
3.4	Conformity as a Factor of Group Behavior
3.5	Relation of the Individual to the Group
	PART FOUR: ACHIEVING EFFECTIVE COMMUNICATION
4.1	Importance of Interpersonal Communication
4.2	Types of Communication
4.3	The Communication Process (Receiver and Barriers)
4.4	The Communication Process (Sender and Feedback)
4.5	Formal Communication and Its Dimensions
4.6	Informal Communication
4.7	Communication Under Battle Situations

Part and Segment Number	Content Heading
	PART FIVE: MILITARY MANAGEMENT
5.1	Introduction to Management and the Management Process
5.2	Decision Making and Creativity
5.3	Objectives
5.4	Planning
5.5	Organizing: Principles and Process
5.6	Organizing: Structure
5.7	Organizing: Charting
5.8	Directing
5.9	Controlling
5.10	Coordinating
	PART SIX: AUTHORITY AND RESPONSIBILITY
6.1	Concept of Authority
6.2	Why People Accept/Resist Authority
6.3	Delegation of Authority; Line-Staff Relationship
6.4	Responsibility
	PART SEVEN: LEADERSHIP BEHAVIOR AND STYLE
7.1	Leadership Behavior
7.2	Leadership Style
7.3	Determiners of Leadership Style - The Leader
7.4	Determiners of Leadership Style - The Group and The Situation
7.5	Participative Leadership
	PART EIGHT: SENIOR-SUBORDINATE RELATIONSHIPS
8.1	Organizational Structure & Social Distance in Senior-Subordinate Relationships
8.2	Officer-Enlisted Relationships
8.3	Assumption of Command and Formal & Informal Leader Relationships
8.4	Introduction to Counseling
8.5	The Counseling Process
8.6	Relations with Seniors and Contemporaries

APPENDIX D.

ORIGINAL TERMINAL OBJECTIVES

CHAPTER I

1. Given the instruction to state why, in a course on leadership, he is studying psychology, the m will state the reason in the following general form: Because the knowledge and application of certain psychological principles are directly related to controlling the behavior of subordinates, i.e. the handling of men.
2. Given a list of historical events in nonchronological sequence, the m will, on instruction, re-list them all in correct chronological sequence.
3. Given the instruction "define clinical psychology," the m will state the definition in the following form: A branch of psychology concerned with psychological methods of recognizing and treating mental disorders and problems of adjustment.
4. Given the instruction "define social psychology," the m will state the definition in the following general form: A branch of psychology concerned with attitudes, beliefs, and psychological factors in group behavior.
5. Given the instruction "define industrial psychology," the m will state the definition in the following form: A branch of psychology concerned with methods of selecting, training, counseling, and supervising personnel in business and industry.
6. Given the instruction "define behavioral psychology," the m will state the definition in the following general form: A branch of psychology concerned with the study of man's observable behavior.

7. Given a list of examples, each of which can be identified as either psychological or technological, the m upon being so instructed, will label each as psychological or technological, then will state the rule or reason he used in labeling each..
8. Given the instruction "define 'cause'," the m will respond: A change in an independent variable.
9. Given the instruction "define 'effect'," the m will respond: A change in a dependent variable.
10. Given the question "Are two events having a high correlation related causally?" the m will answer, not with a mere "yes or no," but in the following general manner: They may be, but high correlations do not necessarily indicate cause and effect relationships.
11. Given a diversified list of human behaviors, the m, upon the appropriate instruction, will classify them by labeling each as either: covert, overt, motor, or affective.
12. Given a list of human verbalization behaviors made prior to task completion and the associated actual completion of the tasks, the m, upon being so instructed, will label each as exhibiting: positive-negative, positive-positive, negative-negative, or negative-positive behavior.
13. Given the instruction "define stimulus," the m will respond: Any physical event or condition, including the organisms own behavior, that may have varied effect on the organism behavior.
14. Given the instruction "define response," the m will respond: Anything the organism does.

15. Given a list of S-R behavioral pairs and given a list of categories "S_D, S_A, conditional reinforcer, primary reinforcer, aversive, and no effect," the m will match, upon instruction, each category to its appropriate S-R pairs.

16. Given a narrative description of human behavior, the m will identify stimulus-response pairs.

17. Given conflicting narrative accounts of the same behavioral event, the m will explain their difference in terms of perceptual variations.

18. Given a list of terms and their definitions, the m will identify those which are operationally defined, using the rule: rule: "A definition of an abstract concept framed in terms of observable events or operations.

19. Given the instruction "define logical construct," the m will respond: a descriptive label attached to intervening events between the independent and dependent variable.

20. Given the instruction "describe the defects inherent in the introspective observation of behavioral events," the m will respond: The validity and reliability of introspective observation is often questionable.

21. Given the instruction "describe the defects inherent in the objective observation of behavioral events," the midshipman will respond: Observation of behavior event(s) may alter the event being observed.

22. Given examples of human behavior and a description of the consequences of each, the m will identify each combination of reinforcement, successive approximation, punishment, or extinction.

23. Given an example of undesirable subordinate behavior, the m will list the psychological principles to be applied for the elimination of the undesirable behavior.

24. Given an instruction to construct examples on the effect of contiguity, the m will do so, using the rule: Learning occurs regardless of whether reinforcement occurs; it is the proximity of a stimulus and response in time that allows the formation of a learning association.

25. Given examples of human behavior under stimulus control and given examples of human behavior under faulty stimulus control, the m will label each as an example of stimulus control or of faulty stimulus control. (Note: relates to Chapters III and IV, especially in the credibility section in Chapter III.)

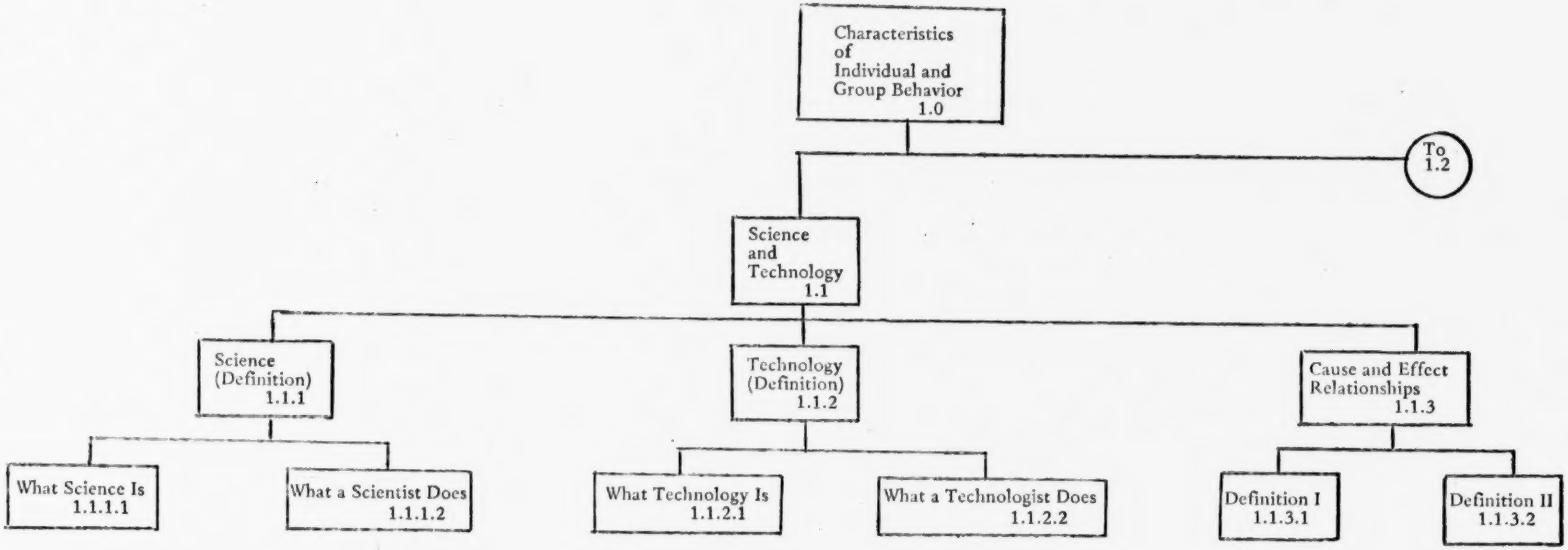
26. Given examples of human behavior in which stimulus generalization is occurring and also given examples in which it is not occurring, the m will identify those in which stimulus generalization is present, using the definition: The spread of a conditioned response to other stimuli similar to the original stimulus.

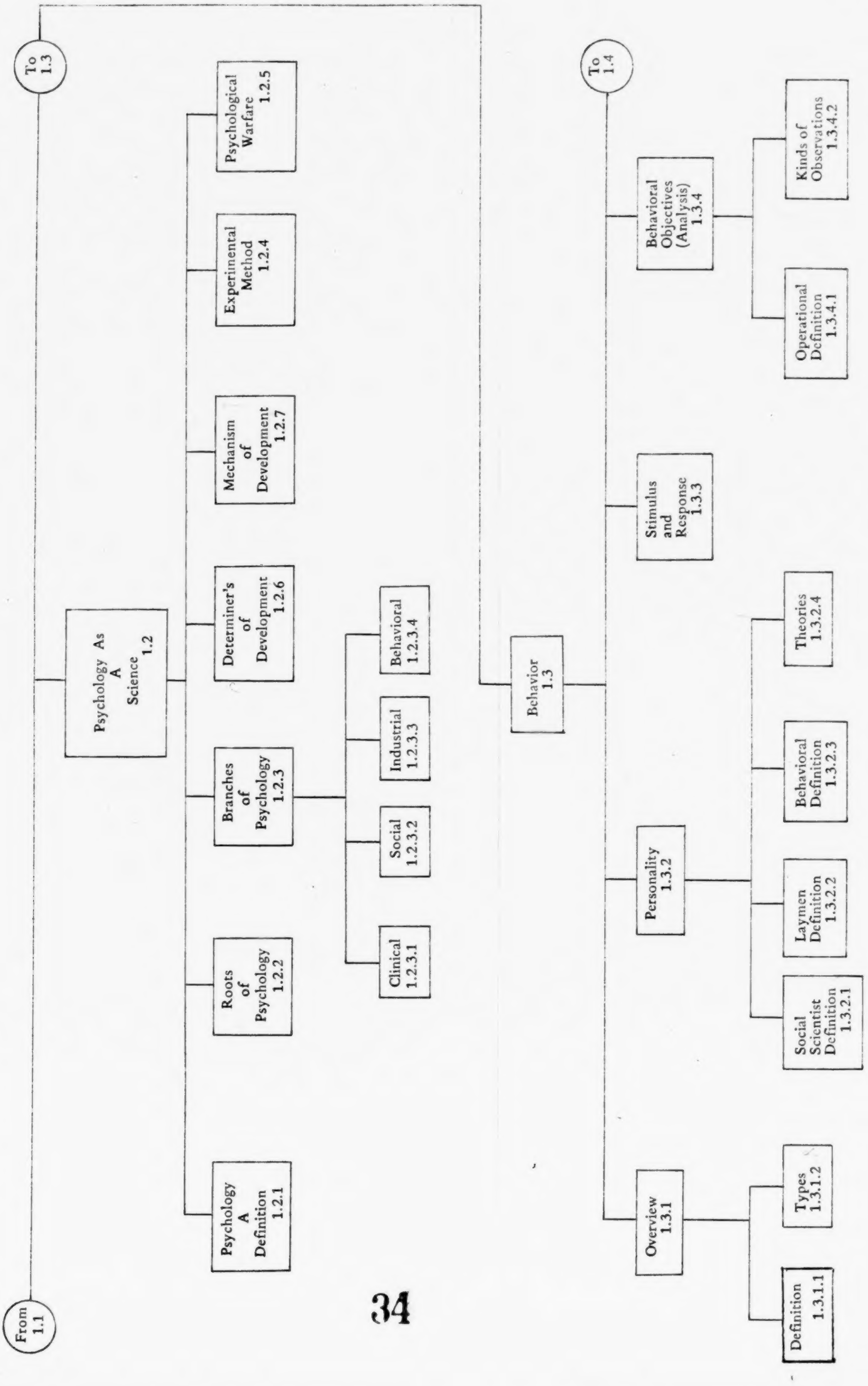
27. Given examples of human behavior in which response generalization is occurring and also given examples in which it is not occurring, the m will identify those in which response generalization is present, using the definition: Response generalization is the emission of a response similar to the conditioned response.

APPENDIX E.

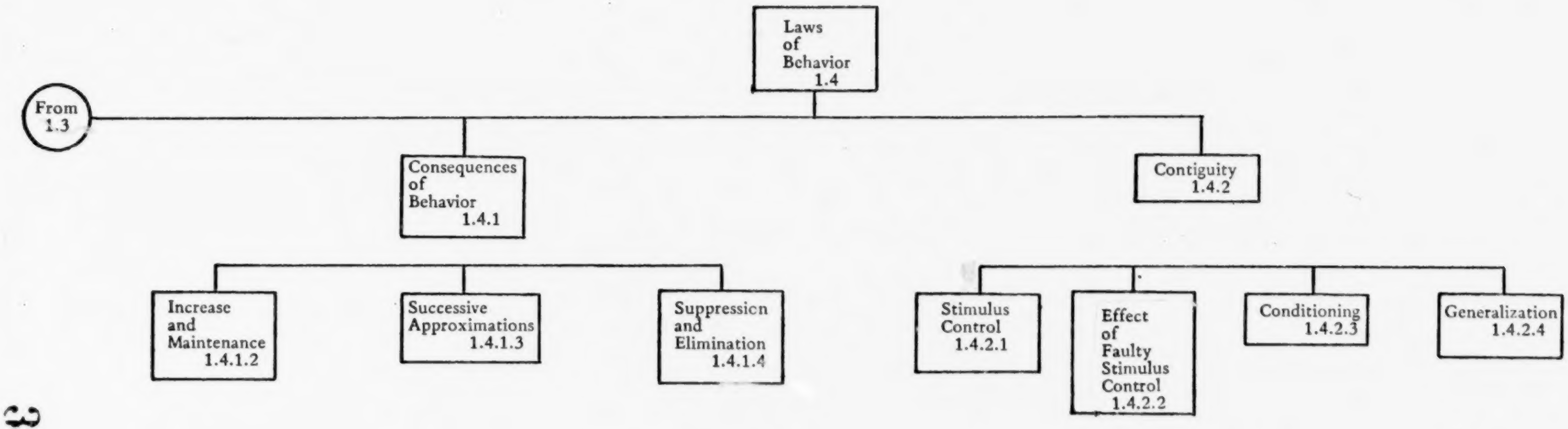
HIERARCHICAL STRUCTURE OF CONTENT OUTLINE

Topic: 1.0 Characteristics of
Individual and
Group Behavior
Page 1 of 3


Characteristics of Individual and Group Behavior 1.0
To 1.2
Science and Technology 1.1
Science (Definition) 1.1.1
Technology (Definition) 1.1.2
Cause and Effect Relationships 1.1.3
What Science Is 1.1.1.1
What a Scientist Does 1.1.1.2
What Technology Is 1.1.2.1
What a Technologist Does 1.1.2.2
Definition I 1.1.3.1
Definition II 1.1.3.2


From 1.1
Psychology As A Science 1.2
Psychology A Definition 1.2.1
Roots of Psychology 1.2.2
Branches of Psychology 1.2.3
Clinical 1.2.3.1
Social 1.2.3.2
Industrial 1.2.3.3
Behavioral 1.2.3.4
Determiner's of Development 1.2.6
Mechanism of Development 1.2.7
Experimental Method 1.2.4
Psychological Warfare 1.2.5
To 1.3
Behavior 1.3
Overview 1.3.1
Definition 1.3.1.1
Types 1.3.1.2
Personality 1.3.2
Social Scientist Definition 1.3.2.1
Laymen Definition 1.3.2.2
Behavioral Definition 1.3.2.3
Theories 1.3.2.4
Stimulus and Response 1.3.3
Behavioral Objectives (Analysis) 1.3.4
Operational Definition 1.3.4.1
Kinds of Observations 1.3.4.2
To 1.4

Page 3 of 3


Laws of Behavior 1.4
From 1.3
Consequences of Behavior 1.4.1
Contiguity 1.4.2
Increase and Maintenance 1.4.1.2
Successive Approximations 1.4.1.3
Suppressicn and Elimination 1.4.1.4
Stimulus Control 1.4.2.1
Effect of Faulty Stimulus Control 1.4.2.2
Conditioning 1.4.2.3
Generalization 1.4.2.4

APPENDIX F.

STUDENT QUESTIONNAIRE

UNITED STATES NAVAL ACADEMY
LEADERSHIP MANAGEMENT COURSE

STUDENT QUESTIONNAIRE

NAME (print)____
(Last) (First) (Middle)

ALPHA CODE ☐ ☐ ☐ ☐ ☐ ☐

CLASS
☐ 1. 1970
☐ 2. 1971
☐ 3. 1972
☐ 4. 1973

HIGH SCHOOL OR COLLEGE SUBJECTS STUDIED

1. Psychology
   ☐ 1. less than one semester
   ☐ 2. one semester
   ☐ 3. two semesters
   ☐ 4. more than two semesters

2. Sociology
   ☐ 1. less than one semester
   ☐ 2. one semester
   ☐ 3. two semesters
   ☐ 4. more than two semesters

3. Business
   ☐ 1. less than one semester
   ☐ 2. one semester
   ☐ 3. two semesters
   ☐ 4. more than two semesters

4. Human Relations (or equivalent)
   ☐ 1. less than one semester
   ☐ 2. one semester
   ☐ 3. two semesters
   ☐ 4. more than two semesters

HIGH SCHOOL OR COLLEGE SUBJECTS STUDIED, continued

5. Leadership
   - ☐ 1. less than one semester
   - ☐ 2. one semester
   - ☐ 3. two semesters
   - ☐ 4. more than two semesters

METHODS OF INSTRUCTION BY WHICH YOU HAVE BEEN TAUGHT

6. Team Teaching
   - ☐ 1. none
   - ☐ 2. less than 3 weeks
   - ☐ 3. 3 to 6 weeks
   - ☐ 4. 6 to 12 weeks
   - ☐ 5. more than 12 weeks

7. Computer-Aided Instruction
   - ☐ 1. none
   - ☐ 2. less than 3 weeks
   - ☐ 3. 3 to 6 weeks
   - ☐ 4. 6 to 12 weeks
   - ☐ 5. more than 12 weeks

8. Teaching Machine
   - ☐ 1. none
   - ☐ 2. less than 3 weeks
   - ☐ 3. 3 to 6 weeks
   - ☐ 4. 6 to 12 weeks
   - ☐ 5. more than 12 weeks

9. Programed Textbook
   - ☐ 1. none
   - ☐ 2. less than 3 weeks
   - ☐ 3. 3 to 6 weeks
   - ☐ 4. 6 to 12 weeks
   - ☐ 5. more than 12 weeks

10. Television
   - ☐ 1. none
   - ☐ 2. less than 3 weeks
   - ☐ 3. 3 to 6 weeks
   - ☐ 4. 6 to 12 weeks
   - ☐ 5. more than 12 weeks

METHODS OF INSTRUCTION BY WHICH YOU HAVE BEEN TAUGHT, continued

11. Videotape

☐ 1. none
☐ 2. less than 3 weeks
☐ 3. 3 to 6 weeks
☐ 4. 6 to 12 weeks
☐ 5. more than 12 weeks

12. Audiotape (tape recorder)

☐ 1. none
☐ 2. less than 3 weeks
☐ 3. 3 to 6 weeks
☐ 4. 6 to 12 weeks
☐ 5. more than 12 weeks

STUDY HABITS

13. Would you rate your study habits

☐ 1. poor
☐ 2. fair
☐ 3. good
☐ 4. very good

14. On the average, do you study

☐ 1. less than 6 hours a week
☐ 2. 6 to 10 hours a week
☐ 3. 10 to 14 hours a week
☐ 4. more than 14 hours a week

15. Approximately how much time do you anticipate studying leadership per week (including class time)?

☐ 1. less than 4 hours
☐ 2. 4 to 6 hours
☐ 3. 6 to 8 hours
☐ 4. more than 8 hours

COLLEGE-RELATED ABILITIES

16. General College Achievement

☐ 1. very much below average
☐ 2. below average
☐ 3. average
☐ 4. above average
☐ 5. very much above average

COLLEGE-RELATED ABILITIES, continued

17. Vocabulary

☐ 1. very much below average
☐ 2. below average
☐ 3. average
☐ 4. above average
☐ 5. very much above average

18. Reading Ability

☐ 1. very much below average
☐ 2. below average
☐ 3. average
☐ 4. above average
☐ 5. very much above average

19. Writing Ability

☐ 1. very much below average
☐ 2. below average
☐ 3. average
☐ 4. above average
☐ 5. very much above average

20. Oral Expression

☐ 1. very much below average
☐ 2. below average
☐ 3. average
☐ 4. above average
☐ 5. very much above average

21. Willingness to participate verbally in class

☐ 1. very much below average
☐ 2. below average
☐ 3. average
☐ 4. above average
☐ 5. very much above average

22. Ability to keep pace in classroom activities

☐ 1. very much below average
☐ 2. below average
☐ 3. average
☐ 4. above average
☐ 5. very much above average

APPENDIX G.

PROGRAM FRAME ANSWER SHEET

PROGRAM FRAME ANSWERS

PART Eight SEGMENT I TYPE Linear Text PAGE 1 OF 1 PAGES

FRAME OR QUESTION NUMBER	CORRECT ANSWER
1	a,b
2	c
3	d
4	c
5	a
6	c
7	a,b
8	b,c,d
9	a,b
10	a,b,c
11	a
12	a,b
13	a-3 b-2
14	a,b
15	a
16	a,b
17	a,b
18	a
19	a
20	a,b,c
21	b
22	a
23	c
24	b

FRAME OR QUESTION NUMBER	CORRECT ANSWER
25	a,b
26	a
27	a,b
28	b,c,d
29	a
30	a
31	a,b
32	a,b
33	b
34	a,b
35	b
36	a
37	a,b
38	b
39	a
40	b
41	a,b
42	a,b
43	a,b
44	a
45	a,b,c,d
46	c
47	a,b
48	b

FRAME OR QUESTION NUMBER	CORRECT ANSWER
49	a,b,d,e
50	a,b
51	b
52	a
53	b
54	a
55	c
56	b
57	a,b
58	b
59	a-1 b-2,3
60	a-2 b-3
61	a,b
62	a,b
63	b
64	b
65	a
66	a,b
67	a,b,c, d,e
68	b,c,e
69	a-4 b-2 c-1
70	a-3 b-4 c-2
71	a
72	b

FRAME OR QUESTION NUMBER	CORRECT ANSWER
73	a
74	a
75	a
76	a,b
77	b
78	b
79	b
80	a,b
81	a
82	a,b,c
83	b
84	a,b
85	a,b
86	c
87	a
88	b
89	b
90	c
91	b
92	a,b
93	b

APPENDIX H.

PROGRESS CHECK ANSWER AND REMEDIATION FORM

PROGRESS CHECK RESPONSE FORM

PART One SEGMENT I

Name Lee Rivers ID 721086

Total time spent on segment (including Progress Check and Remediation) 65 minutes.

TEST ITEM	RESPONSES		REMEDIATION REFERENCES (Syndactic Text)
	FIRST TRIAL	SECOND TRIAL	
1	C		Summary 1; page 2
2	B		Summary 3; pages 86-87
3	B	D	Summary 1; pages 1-4
4	A		Summary 2; page 48
5	C		Summary 2; pages 44-54
6	D	B	Summary 3; page 85
7	B		Summary 2; page 48
8	D		Summary 2; page 51
9	C	B	Summary 1; page 5
10	C		Summary 3; page 84
11			
12			
13			
14			
15			
Total Number Correct	7	9	
Percentage Correct	70	90	

APPENDIX I.

DEPTH CORE UNIT

DEPTH CORE # 1

PERCEPTION AND LEADERSHIP

PART II

STATEMENT OF INTENT

The whole focus of Part Two is not an attempt to impart a rigorous study of psychology, but rather to make a future Junior Officer aware of leadership problems that stem from the psychology of individual behavior. In the various segments of Part Two the midshipman studies how principles of learning, neurotic behavior, motivation, attention and perception are interwoven in leadership problems that involve people. The young officer is likely to find the above principles at work whenever he has to solve a problem involving the testimony of other people. He must become aware that his individual perception of why something has gone wrong, or whether an order was clearly stated, will have a tremendous impact on his ability to take necessary and effective action. The general purpose of this depth core, therefore, is to make the midshipman dramatically aware of the subtleties of personality that will bias testimony.

OBJECTIVES OF PRESENTATION

More specifically the midshipman will be made aware that:

1. The leader should appreciate biases or frames of reference in others.
2. The leader will develop an appreciation for the existence of his own frame of reference, which, however involuntarily it operates, detracts from his ability to be truly detached and objective.

APPROACH TO PRESENTATION

In this depth core the Midshipmen will have an opportunity to view and discuss how the communication process is affected by perception. They will first view a film showing an interchange between an officer and an enlisted man. Later there will be a discussion of how perception affected the interchange and how the officer could best deal with the situation, taking into account the various problems of perception.

The instructor should give the Midshipmen the Student Handout before showing the film, so that they may use it for reference during the discussion. Also, before showing the film, he should ask the students to pay particular attention to the role of perception in this interchange.

STUDENT HANDOUT

THE SITUATION

LTJG Malcolm Riley has been assigned as division officer for the data processing unit at an east coast installation. LT Riley, a recent graduate of post graduate training in computer sciences is extremely anxious to prove his worth by maximizing the efficiency of the data processing installation with his newly acquired systems knowledge.

Under him is a chief petty officer with many years experience in administrative type activities. CPO Clement Halsom has only recently acquired some computer training, although he did have some extensive experience with TAB equipment such as key punch duplicators and verifiers. CPO Halsom is essentially the unit operations officer with 10 enlisted men as operators and programmers for the installation. When LT Riley first took over, he reviewed the personnel files of his men to determine which ones might have previous data processing experience, and who might qualify for further training to implement some of Riley's own concepts for state of the art data processing. He singled out three who had had some college background, electronic training and some prior experience as programmers as civilians.

LT Riley discussed some of his plans with CPO Halsom and gave to the CPO the responsibility of locating all inefficient and wasteful practices which slow down the throughput of data in and out of the center. At that time he pointed out to Halsom the three enlisted men whom he was considering for selection for upgrading and further training. CPO Halsom was particularly quiet when asked for his comments on the three enlisted men. And when Halsom did not ask for further clarification on throughput problem areas, LT Riley assumed that his directive was quite clear.

Riley had planned on reporting to his superior, CAPT Rutherford, with a complete briefing on his projected plans for upgrading the EDP center and made the appropriate appointment. Three days prior to his briefing with his superior he calls in CPO Halsom and asks for a progress report on the problem areas in the center.

The Meeting

(Script)

The scene is an office. LTJG Riley is seated at his desk reading. There is a knock on the door. He looks up.

LTJG RILEY: Come in.

Oh Chief, I've, ah, been wanting to talk to you about the problems that you've been having with this report.

CPO HALSOM: The problems - the real problem with this operation is that these programmers think they know everything and they are afraid to do any real work.

LTJG RILEY: Well, who are these people who are non-performers?

CPO HALSOM: As a matter of fact, sir, those three enlisted men you pointed out to me, Sisca, Dunn, and Bradshaw are really major obstacles to any kind of work around here, sir.

LTJG RILEY: Well, Chief, specifically what is it that they do that is so obstructive?

CPO HALSOM: Well, I'll give you an example. Even before you came they were complaining about the old equipment we had here and bugging me to push for more new fangled gadgets. If the reports were delayed, or outputs, they blamed the equipment when the fault was usually their trying to write cute and sophisticated routines that the machines just weren't capable of handling. Well, after you talked to them several weeks ago, they began to add even more pressure,commenting, "finally the data processing sign over the door won't be a fraud anymore." Sir, I've had more bouts in my 5 years here with people trying to get miraculous results out of these machines than I care to think about.

LTJG RILEY: Is this all by way of report you have to give me? I had expected and had promised Capt. Rutherford a detailed systems analysis of problem areas with this operation. And all you have to tell me is that you have to put up with a bunch of smart alecks. How can I be expected to justify the outlay of funds without detailed justification? I had relied upon you as the man most knowledgeable to give me such a comprehensive analysis.

CPO HALSOM: Capt. Rutherford is new here also, isn't he, sir?

LTJG RILEY: Well yes, but what does that have to do with it, Halsom?

CPO HALSOM: When you asked me three weeks ago, and I think I'm quoting you directly, for, quote, "inefficiencies in throughput," I thought you were talking in terms of people. If the jobs aren't getting done, it's the people who don't do the jobs. I responded to your request the best way I knew how. You never used the term systems analysis. If your directive was to find inefficient central processor use, you not only have the wrong man, I think you are looking at it from the wrong point of view. The jobs have always gotten done when you had the right people to do them. People who aren't afraid to work. Organizing people is more important than organizing machines, bits, bites, or whatever you call them. Is there anything else, sir? I have a job to do.

Riley's temper was under control but only barely. For the first time, he thought he was about to lose his cool and explode at the man that he desperately needed to keep whatever efficiency of operations that existed.

He recalled CAPT Rutherford's comments when he had taken on the job as head of the data processing center. Rutherford was not very complimentary about Halsom's performance and had said that there were too many jobs, but that the data processing center should have been able to handle them, though Halsom never quite seemed to get them through on time.

Riley looked across the desk at Halsom who seemed a little more content now that he had said his piece. Riley began talking.

DISCUSSION QUESTIONS AND RESPONSES

The instructor or the discussion leader should not allow the group discussion to center on the mechanism of adequate communication or on rank and authority. These are side issues to an emotionally explosive situation where a discussion on a seemingly inert collection of machines is turned into an extremely challenging confrontation. The whole point of Part Two is that a knowledge of individual behavior will help to explain why people act the way that they do. Some of the following questions can be used to direct the discussion.

1. Is Halsom telling the truth?

[suggested answer: Halsom is telling the truth. He perceives his own role as that of a man who is forced to work at high levels of expectancy with a minimum amount of praise from the top and a minimum amount of direct support from subordinates.]

2. Why is Halsom's estimate of his performance different from CAPT Rutherford's view?

[suggested answer: I am sure that Halsom is surprised that the job gets done at all considering what he feels he has to put up with. CAPT Rutherford, from his rather olympian view point, may not like the style and appearance of Halsom's work. CAPT Rutherford probably objects to the lapses in the schedule without a true appreciation (in Halsom's eye) of what the job truly requires.]

3. Should LT Riley's response, in large measure, be based upon Halsom's competence to assess the situation realistically?

[suggested answer: It seems that Riley would be in error to dismiss Halsom's assessment of the situation since it is firmly and deeply held on to. Riley, however, would be in even greater error if he were to accept Halsom's assessment as the total picture. In other words, while he can not dismiss Halsom's assessment, Riley must make a clear distinction between Halsom's view and Halsom's ability to see a broader view.]

4. If you were Riley, how would you respond to the very formal hostility of Halsom?

[suggested answer: Since I don't think this formal hostility could be changed very quickly, it should be generally ignored. Halsom is obviously angry that he is again being reamed out for conditions that he has no control of, yet is responsible to effect results despite the conditions.]

5. To what extent is Riley capable of seeing some of his own biases if there are any?

> [suggested answer: It is doubtful that Riley can see any of his own predispositions. He is "extremely anxious to prove his worth." He is "gung ho" and generally likes to think that he is a young man on the way up. Overall he is blind. This does not prevent him from acting although it does raise another question. Is he morally responsible for his inability to understand other people?]

6. Is Halsom's perception of what is wrong justified?

> [suggested answer: As in response to question one, his perception is justified. Unfortunately, it is not the total picture.]

7. Why is the perception of the three enlisted programmers with previous civilian experience so provocative?

8. What is their probable perception of Halsom's capability?

> [suggested answer: This should be fairly obvious. The three programmers with previous experience probably look on Halsom as something of an old

fool who can not match their own expertise. Halsom reinforces their negative viewpoint because he is so easily threatened by their remarks.]

9. How can one change another person's perception of what is happening? Despite this encounter, should Riley tell CAPT Rutherford that Halsom is quite competent? Should Riley go to Sisca, Dunn and Bradshaw and demand that they be less critical? Involved in all this are leadership decisions that are not easily made because no one can agree on what really is happening.

10. What are some of these decisions and what recommendations do you, as a roommate perhaps, make to Riley? He has a two year stint ahead of him and must learn to work with Halsom.

[suggested answer: Riley could make a great contribution with his relationship to Halsom by suggesting that he, Riley, talk to CAPT Rutherford about the problem that he, Halsom, faces on a day to day basis. Riley should not approach the three enlisted men and demand that they be less critical since he would be clearly undermining any authority that Halsom would have. In general, the best way to alter another's perception regardless of what you may think of it is to say, "Yes, you are absolutely right and I understand how you would feel. Let's see how we can improve the situation for in addition to what you tell me which is serious enough, there is this additional problem." What is being attempted here is not to deny the other's perception but to move his frame of reference into another sphere.]

11. Is there a possibility that Halsom's attitude might be summed up with the comment "Division officers come and division officers go, but I run the shop."?

[suggested answer: There is a clear possibility that he has this attitude and it may be justified. If he seems a bit arrogant toward superior officers, it has a quality of pride in doing a job well. Solution: The suggested response in questions nine and ten seem to be the most desirable method of handling the problem. Realistically, however, Riley most likely is incapable of seeing this as a solution and would probably resort to the exercise of his formal rank and authority and position to bully Halsom.]

EVALUATION PROCEDURES

If grading is going to be used in conjunction with this depth core it is recommended that several questions listed under Discussion Questions and Responses Section be given to the students to construct in writing their own responses.

Another approach might use the objectives stated in an earlier section with the following questions.

1. To what extent can a leader appreciate his own bias or frame of reference in other people?
2. Discuss the practical implication of the following statement, "Every leader has his own frame of reference which, however involuntary it operates, will detract from his ability to be truly detached and objective."

APPENDIX J.

TEST FOR WRITERS AND EDITORS

NAME:________________________ DATE:________________
Last First MI

Westinghouse Learning Corporation

PROJECT ANNAPOLIS

Evaluation Instrument for Editors and Writers

TO ALL APPLICANTS: In order to assess your abilities, we must know something about your knowledge, and how you apply your experience. Your performance on this evaluation instrument will tell us a little of what we must know. This evaluation is not competitive, nor is it public property. Your performance will be discussed between you and a supervisor, after which the instrument will be filed with your personnel records.

You will have 30 minutes to complete this evaluation. Accuracy, of course, is more important than speed. Your speed, nevertheless, will be taken into account.

This evaluation has two major parts:

1. Technical knowledge
2. Writing skill

The technical knowledge section will require you to answer some questions about certain aspects of educational technology.

The writing skill section will test your ability to

1. Spell
2. Punctuate
3. Detect faults
4. Structure a paragraph
5. Write

Let the person who is administering this evaluation know when you have finished reading this. He will time your progress.

TECHNICAL KNOWLEDGE

Educational Technology

CIRCLE YOUR CHOICES:

1. Which of the following items are NOT principles of learning which should be applied to a typical lesson of linear programmed instruction?

    1. Immediate confirmation
    2. Variable-speed student pacing
    3. Intrinsic framing
    4. Small steps
    5. Active responding
    6. Self-pacing

2. Another name for Intrinsic Programming is:

    1. Adjunctive scaling
    2. Branch programming
    3. Linear framing
    4. Prescripting

3. Which of the following phrases should NOT appear in the wording of a terminal objective?

    1. To know
    2. To fully appreciate
    3. To enjoy
    4. To compare
    5. To identify
    6. To understand
    7. To write
    8. To recite
    9. To believe
    10. To list

4. Which of the following statements constitutes a valid terminal objective?

    1. The student must be able to derive answers for many equations.
    2. The student must be able to correctly snare at least three purple alligators within a period of 50 minutes.
    3. The student must understand the second law of thermodynamics.

5. What does a terminal objective describe?

    1. What the course is about
    2. What the learner must do to qualify for the course
    3. What the successful learner can do at the end of the course
    4. What relationship obtains between the course structure and the course content

6. The smallest complete unit of programmed instruction is called

    1. a frame.
    2. an objective.
    3. a criterion step.
    4. a linear confirmation.

7. What device is commonly used in order to determine whether the student has attained the objectives of a programmed instruction lesson?

    1. An expository statement from the student
    2. A pre-test
    3. A criterion test
    4. An intrinsic determination instrument

8. How can the learning gain from a lesson of programmed instruction be measured?

    1. Compare the pre- and post-test scores
    2. Contrast the median against the excluded criterion
    3. Use a 60% conversion factor on the raw score of a criterion test
    4. Conduct an item analysis of frame responses

9. The task analysis for a given lesson should be undertaken

    1. After the lesson outline has been completed
    2. Before lesson objectives are developed
    3. After criterion testing of the target population
    4. Any time after frame construction

10. Write, in the space below, in five sentences or less, a description of the essential difference(s) between linear and intrinsic programmed instruction:

WRITING SKILL

1. SPELLING

Underscore any misspelled word(s) and indicate the correct spelling in the space at left as shown in the example.

(repetition, comparatively)	The repitition rate was comparitively constant.

1. The apperatus was scheduled for delivrey.

2. All the labratory personell moved accross the hall.

3. Changeing the gear ratio releived the tourque.

4. The assumption that a continuously variable force is irreversible is erroneous.

5. The principle theory was explained.

6. The design has much in it's favor.

7. These brief instance of time are measured in microseconds.

8. Reivew these matterials for aproval.

9. This divice funtions eratically.

10. Some personnel preferr being schedualed for night duty.

2. PUNCTUATION

Indicate any error or omission of punctuation and make the appropriate correction.

1. These senior writers were selected Simons, Harvey and Turner
2. You will discover for example that motors are required.
3. Define the word parameter.
4. Its a perfect device.
5. The flange is welded to the valve see Figure 7.
6. Previously he had been a junior writer.
7. The I beams were joined by a T bar.
8. This is a direct current motor.
9. People must organize, it has always been so.
10. Its only possible at this stage to give a ball park figure.

3. FAULT DETECTION

The following sentences are ambiguous because of bad construction, poor choice of words, or weak thinking on the writer's part. Indicate the fault and recast the faulty sentences in order to make them more understandable.

1. My algebra was rather weak when in school.

2. While erecting the antenna, the lightning struck it.

3. The size of the unit is 3"HX6"WX4"D.

4. Familiarization with the contractural requirements is necessitated if we are to finalize the contractual obligation.

5. The important essentials must be included in the design.

6. Being fabricated from aluminum, I achieved a remarkable lightness in case design.

7. Neither of these programs have been validated.

8. The lesson was taken for validation to the Naval Academy.

9. The process consists of three steps: outlining, frame constructing, and to write criterion tests.

10. The production end fell down on delivery.

11. The aperture is a six inch deep square cavity.

12. The vibration problem was solved by increasing the shock mounting.

13. Three lessons were written, each larger than the other.

14. An unsuccessful solution to the problem is anticipated.

15. We must analyze our past history on this contract.

4. PARAGRAPH STRUCTURE

One of the most flagrant errors committed by writers is the violation of paragraph structure. No other single error makes for more ambiguity.

A. In the following paragraph, the sequence of the sentences has been shuffled. Identify the topic sentence by underscoring it.

> As a result, his precious writing time is wasted in idleness. He sharpens pencils; stares out the window; gets himself a drink; he does everything but write. "Dithering" may be defined as the habit of "busily doing nothing." The writer sits helplessly before a blank sheet of paper, with his mind equally blank. Although old hands at the writing game may experience a few twinges of dithering, the habit is most common with inexperienced writers.

B. In 25 words or less, describe the function of the topic sentence in the paragraph.

5. WRITING ABILITY

Essay-type responses indicate your general writing ability better than any other kind of response.

Here you will write four brief essays, none more than 100 words. Take no more than three minutes to compose each essay.

A. Describe how to tie a shoe lace in 100 words or less.

B. Take a coin from your pocket, place it in front of you, and describe it in 100 words or less.

C. Describe how to use a standard pencil sharpener in 100 words or less.

D. Describe the contrasting characteristics of a foreword, a preface, and an introduction in 100 words or less.

Return this evaluation NOW to the person who is administering it.

WESTINGHOUSE LEARNING CORPORATION
PROJECT ANNAPOLIS
EVALUATION FOR EDITORS AND WRITERS

EVALUATION OF RESULTS

TECHNICAL KNOWLEDGE

10 questions at

10 points each = 100 points

WRITING SKILL

Spelling: 10 Q's at 1 point each = 10

Punctuation: 10 Q's at 1 pt each = 10

Fault Detec: 15 Q's at 2 pt each = 30

¶ Structure: 2 Q's at 3 pt each = 6

Writing abil: 4 Q's at 11 pts ea = 44

TOTAL = 100 points

STATUS	PER CENT CORRECT	
	TECHNICAL KNOWLEDGE	WRITING ABILITY
Apprentice	30 - 50	40 - 60
Junior Writer	70 - 80	70 - 80
Senior Writer	80 - 90	90 - 100
Editor	80 - 90	100

APPENDIX K.

PRODUCT TASK COMPETENCIES

RESEARCH AND EVALUATION PLAN

Product Tasks:

Examine all objectives of all segments of the course for the purpose of creating a "content map"
Develop rationale for requesting an unscheduled run of the course
Read all back reports to prepare to handle research and evaluation coordination after 2 years of operation
Study the implementation aspects of the first run of prototype course materials (Phase I)
Study and develop hypotheses about possible subtle effects of slight variation in instructions to students taking course
Confer with users and developers rating the course on how best to give users a sense of the integrated wholeness of the course

Develop hypotheses about various levels of information which could be given students about the various experimental conditions used

Confer with consultant on guidelines for determining when effects of learner characteristics could be examined with respect to 137 characteristics listed, 44 students in course

Develop general specifications for implementing a confirmation answer sheet to student managed progress check materials

Confirm sequencing of instructional objectives by consulting with content specialist

Develop a plotting chart for all segments of the course, including all variables manipulated within

Assign random selection of students to cells within the plotting chart, sequencing various groups differently through the variables

Confirm correct treatment label of each module in terms of the instructional condition within

Confirm that the number of groups plotted corresponds to the number of groups necessary to address research questions

Confer with consultant with regard to the need to "force" some students through materials previously routed around

Provide materials production personnel with specifications for materials to be developed based on research questions

Provide materials production personnel with specifications for developing and implementing test items to establish norms

Design parallel modules using identical presentation in different media

Vary response demand and management frequency as defined by research design

Rewrite terminal objectives for each instructional unit into content statements appropriate for a content map

Maintain record of instructor-student interaction time (tutoring)

Maintain record of total time instructor involved within instructional system

Maintain record of time required for course administrator (materials control clerk)

Assess from data which media forms in the instructional materials appear to be most effective, liked by the students

Tryout initial instructional unit prototypes on small group of students to assess operability, etc.

Analyze data from tryout to determine required revisions of instructional material

Review with field setting instructors any problems they experienced in the first experimental and developmental run of the course
Examine computer documents utilized in course to determine refinements necessary to accommodate course users equipment likely to be found in a broad range of settings
Determine, from Phase I data, a tentative optimal frequency for building-in response sensitive feedback in instructional materials
Up-date research design to incorporate an examination of the effects of use of confirmation answer sheets vs. no confirmation
Up-date research design to incorporate an examination of the effects of use of content maps on student performance
Confer with instructors about possible discrepancies between intended implementation of the course and actual implementation
Recommend printed version of all media dependent materials be included in research design if such back-up is produced
Up-date research design to demonstrate effects of use of identical items in pre- and post-criterion tests
Determine data contaminated as a function of any incorrect implementation procedures in Phase I
Determine need to add an unscheduled run of course to obtain appropriate data for research questions not answered
Review with field setting all test items for appropriateness and whether each represents an acquisition or application performance
Review student questionnaire responses and interpret in light of student performances in the course
Monitor personnel who are documenting cost factors involved with development, implementation and operation of course
Delegate task of refining of instructions in use of instructional materials to others
Interact with instructors and faculty supervisor regarding use of identical items in pre- and post-criterion tests
Interact with field setting to obtain the required cooperation in implementing course rigidly enought to support research
Make clear the manner in which each student is to be sequenced through various media to support the research design
Make clear to the field setting the necessity for student response modes being limited only to that specified

Review with field setting all course implementation instructions including specified paths for specified students
Explain to students and instructors the rationale for not using response sensitive feedback in the early development of materials
Confer with instructors about placing trust in the student in developing the strategies for response sensitive feedback materials
Participate in staff discussions regarding the purpose, intent and content of reports to be written
Participate in staff and user meetings regarding size of instructional booklets and relative costs for on-going utilization

Product Enablers:

Know one statistical design from another and what the implications and assumptions of each are
Knowledge of the meaning and value of behavioral objectives
Knowledge of how much one can do with a computer in assisting and/or managing instruction
Awareness/knowledge of the typical problems which can beset a research design and confound the data
Knowledge of the rationale behind various statistical designs
Ability to respond to questions or criticisms that convey an appreciation of the concerns expressed
Skill in sorting out and maintaining a consistent posture in relation to where each area of expertise resides
Sensitivity to experimental design as a means of addressing relevant questions.
Sensitivity to instructional systems as an important construct in developing technology in education
Sensitivity to the minor details that can contaminate or confound the real meaning of collected data
Sensitivity to the needs of teachers and how those needs can confound developmental efforts if not attended to
Sensitivity to test construction that guards against self-fulfilling measures
Sensitivity to reality and what is possible to achieve within the limits of a project
Can't be perturbed or easily upset by those who cannot "see the obvious" (understand the need for purposes of research design)
Willingness to admit to rigidness in one's self and to give a little bit in the face of an impasse

Sensitivity to identifying those critical variables in a research effort which should be least confounded by the design
Willingness to fill "credibility gaps" between producers and users as they are identified
Sensitivity to the need for developers and consumers to start on a common base or framework

INSTRUCTIONAL PRESENTATION DESIGN

Product Tasks:

Work with consultants about objectives of presentation design
Establish schedule for students taking tests
Write instructions for students' use of each instructional segment
Get all course segments and testing materials ready for next run
Write new instructor guide
Create methods to keep track of all data (control systems--Student Data File)
Develop from for suggested revisions
Keep records of materials which were handed out (used)
Do hand analysis of data to determine percent of correct responses to each test question
Use (administer) form for suggested revision
Help change research patterns for fall to ones which will be possible in classroom
Work out new processes for course administration
Hand out test and materials
Schedule material from development people on time for fast students
Schedule activities for next run--flow chart of activities geared to calendar
Explicate students' responsibilities out of research design
Define role of instructor, course administrator, student
Motivate students to not sabotage research
Interact with other responsible persons on course administration

Product Enablers:

Knowledge of research design of this project in order to correlate instruction efforts with objectives of research
Knowledge of course pattern (not content) to interpret to students
Skill in reading computer printouts about student performance in order to alter course structure
Abilitv to use in proportion, time for scheduling

Skill in flow chart reading, to use in following directions of research staff
Skill in conceptualizing flow chart to direct students
Skill in flow chart preparation to direct students
Skill in motivating in working with students to keep course moving
Ability to listen carefully to complaints of students in order to modify course, help student
Ability to organize to keep track of all parts of course and materials important to each
Sensitivity to when students were sabotaging research to help evaluate data

PROGRESS CHECKS

Product Tasks:

Write test items to produce Progress Check keyed to the instructional materials
Read instructional materials that test items covered to insure correspondence between test items and instructional materials
Check terminal objectives/enabling objectives to see that they were covered by test items

Product Enablers:

Knowledge of the subject matter/content area related to progress check test items

STUDENT DATA FILE

Product Tasks:

Figure out what is information needed by research instructor in way of student data file
Make chart of modules, tests, deadlines, student assignments
Keep records on materials handed out
Keep records on course segments completed by students
Invent methods for handling progress and cumulative test data
Show exact units received by each student
Show scores made by each student failure or pass 70%
Check questions missed to give specified remediation assignment
Keep record of the delinquency status of "laggers"
Enter test results on student progress chart
Compile record of location of all students at time of test
Check for students using other than assigned media
Gather and send data to data processors

Do hand analysis of data to compute percent of student responding correctly to each test item for use in improving course
Keep duplicate records of all data
Encourage students to take research as well as grading tests
For second failure, refer for tutoring--follow up to see what student gets
Communicate with students through "mail boxes"

Product Enablers:

Knowledge of course administration design
Knowledge of research design of this project in order to keep data properly
Knowledge of hand sort methods in order to select the required data for each research concern
Ability to organize in order to develop methods for storing and retrieving data
Ability to take care and patience in record keeping in order to reduce errors in data

STUDENT/INSTRUCTOR USE GUIDE

Product Tasks:

Review all related course materials
Describe the traditional course that the new mediate course is paralleling
Build outline of total use guide encompassing all of the above
Clearly state, in writing, instructor's role
Put in history of the course in leadership at the user agency
Point out that helping research contributions to user leadership
Describe student role in mediated course
Write total guide, using outline as basis

Product Enablers:

Knowledge of history of the project
Knowledge of research design of project
Knowledge of new mediated course functioning in terms of what is expected of instructor and student
Ability to sense fitness of material for sponsor's target
Skill in writing clearly so someone unacquainted with the course can understand the roles of instructor and student
Sensitivity to needs of students
Sensitivity to needs of instructor

COURSE DEVELOPMENT MODEL

Product Tasks:

Analyze all data about traditional course content
Talk with agency colleagues about military needs for course
Build objectives from course outline, one terminal objective for each major segment, two or more enabling objectives for each
List new suggested course content
Rebuild course outlines on basis of sponsor reaction to suggested list
Work with colleagues on final draft of content outline
Finish writing Part 5 for Phase I final
Delete parts of course and related objectives to make content outline short enough for sponsor to accept
Negotiate with sponsor representatives about acceptance of components
Negotiate with sponsor about acceptance of components
Get total new course content outline approved by sponsor
Work with agency consultants to work out course content outline for Part 5 to include all specified subjects and develop terminal and enabling objectives for each
Present recommended course content to sponsor for reaction
Provide required course content information from sponsor to project
Interface with individual students when there are problems, or getting material, briefing, etc.
Provide input re: affect, experience of teaching unmediated course to project
Work with writers to write parts of course
Work with writers about Part 5, developing course materials from objectives
Work with consultant about writing outline for strength in teaching patterns
Work with writers about content (sponsor examples) units of component

Product Enablers:

Knowledge of previous course content
Knowledge of project research design
Skill in negotiating with sponsor
Ability to be flexible when decisions changed by sponsor
Skill in teaching to use in teaching traditional course as it has been taught to compare with experience of teaching new mediated course

Ability to work with writers on course content changes from sponsor (interpreting)
Ability to explain and negotiate with sponsor the course content changes from project
Ability to do things over and over without guidelines until they are acceptable
Ability to tolerate criticism and rejection of work without losing desire to start over and do it again
Sensitivity to military standards: morals, fitness, duty, ideas of leadership
Sensitivity to what sponsor would complain about in examples in course material

STRUCTURAL COMMUNICATION MODULE

Product Tasks:

Review military leadership publication for purpose of extracting examples and case studies
Design of structural communications units by subcontractor
Provide subcontractors with basic content materials for units
Provide specific instructions as to how to use a specific phrase relative to American language
Provide military examples around which units could be created or constructed
Rework materials to insure correct format
Write the structural communications unit
Edit peculiar British phraseology in matrix statements
Package material in booklet
Do the lesson within the structural unit(s) - work through material
Field test materials with target population types
Record student comments relative to materials
Review/edit the unit material in a Structural Communication Unit.
Read materials to insure understanding of content and instructions (trial run)
Modify unit material on basis of field test with target population

Product Enablers:

Knowledge of American military leadership (user relevant) situations
Knowledge of military (user relevant) terminology
Ability to detect differences in meaning between item in response indicator and the author's rationale for the item for purposes of revising
Ability to thoroughly read through materials to note any errors, misunderstandings, discrepancies

CONTENT MAPS

Product Tasks:

Draw meaningful phrases from course outline enabling objectives and terminal objectives to give cues to students about what it is expected they will learn
Display in flow chart the sequence of segments and relationships
Display terminal objectives and enabling objectives

Product Enablers:

Knowledge of course structure in order to display it
Knowledge of what is meant by enabling and terminal objectives
Skill in flow chart techniques for drawing flow chart of cours progress
Skill in writing, for phraseology, clarity in explaining objectives to students
Sensitivity to students' need to visualize total course section

APPENDIX L.

GENERAL RULES FOR PROGRAMMED INSTRUCTION

General Rules for Programmed Instruction

Ideally, all programmed instruction has several things in common. These common elements are:

- o a task analysis
- o a set of learning objectives
- o an outline for frame construction
- o a list of prerequisite skills
- o a criterion test

The task analysis is a series of statements about the behaviors that are necessary to do the job that is to be learned. This analysis is acquired by observing what people do on the job.

The learning objectives are statements of what the learner will be able to do as a result of taking the course.

The outline is a thorough, concise, and sequential listing of the subject-matter that is to be covered, and to which the objectives are related.

The list of prerequisite skills tells what the learner must bring to the course in order to profit from it.

A criterion test is a series of test items which determine whether the student has met the stated objectives. Criterion test items require behavior from the learner that corresponds to the behavior stated in the objectives.

Ordinarily, usually, and for the most part, there are four principles of programmed instruction which apply to all frames:

1. small steps. The material to be learned is presented in "optimally-sized increments," which is pedaguese for "nobody knows how big 'small' is." It really is up to the PI writer to determine the size of the frames he writes. Only developmental testing will tell him whether his frames are too long.

2. active participation. The student continually interacts with the program. He answers questions, he fills in blanks, he chooses alternatives, etc. Ordinarily, usually, and for the most part, the student is required to actively respond to every frame of programmed instruction. In some types of programs (intrinsic, for instance) he cannot progress without responding correctly.

3. immediate feedback. As soon as he has responded, the student is informed of the merit of his response. This principle, because of the WLC research design, has been omitted from the linear and syndactic programmed instruction frames in the LEADERSHIP MANAGEMENT course. The reason: in linear, intrinsic, and syndactic frames, an incorrect response calls for the student eventually to repeat the frame and respond again; this means that the student who responds incorrectly would have more exposure to the learning materials than the student who responds correctly. This difference in exposure to the materials would invalidate the results of the progress checks. Therefore, WLC has omitted confirmations from all but the intrinsic (branch) programs. All

Midshipmen, therefore, will have seen the learning materials once before taking a progress check.

4. self-pacing. Each student has his own copy of the program, and can therefore learn at his own speed. He doesn't have to wait for slower students or find himself confused because the classroom pace is faster than his ability to comprehend. In some programs (intrinsic and syndactic), the amount and nature of the instruction the student receives is determined by his responses. The student who responds incorrectly is exposed to more and different material than the student who performs satisfactorily.

LINEAR PROGRAMMED INSTRUCTION

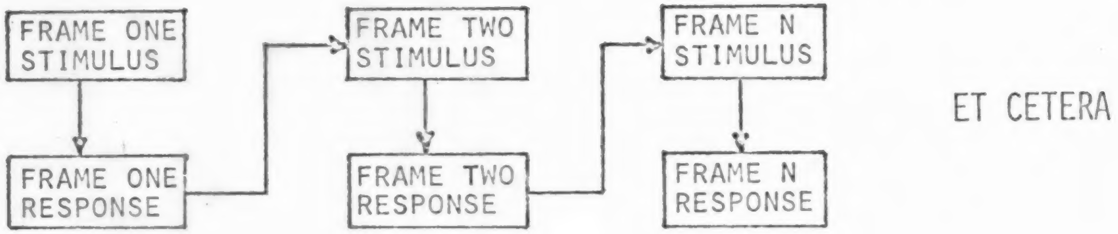
In a linear program, every student takes the same stream of instruction. See Figure 1.

In a frame of linear programming, the student is usually presented with an increment of information (called the 'stimulus'); he is then usually made to answer a question about the information (his answer is called the 'response' to the stimulus).

The programmed instruction writer usually depends wholly upon his outline in the construction of stimulus portions of linear frames. When the outline is well-constructed (that is, when it is in the correct learning sequence and touches each point of subject-matter to be learned), it can itself serve as the stimulus portion of the teaching frames with little or no modification.

FIGURE 1

LEARNING STREAM --- LINEAR PROGRAMMED INSTRUCTION


FRAME ONE STIMULUS
FRAME ONE RESPONSE
FRAME TWO STIMULUS
FRAME TWO RESPONSE
FRAME N STIMULUS
FRAME N RESPONSE
ET CETERA

There is no such thing as a 'pure' linear program. Many of WLC's linear programs cover in a 50-minute segment the material that someone else might wish to cover in a 5-hour linear program.

Some of the WLC frames present supplementary information that contributes to the Midshipman's ability to meet the objective without requiring an active response to the information.

On page 6, you will find a typical frame of linear programmed instruction. Keep in mind, however, that the construction of frames varies according to the objective to be achieved, the nature of what is to be learned, the time in which it is to be learned, and the environment in which it is to be learned.

SUPPLEMENTARY INFORMATION

STIMULUS

RESPONSE

39. STEPS IN PLANNING

All leaders must continually look to the future and plan those activities over which they will have direct control. Planning should begin before specific missions are established. Preparing for possible activities enables the leader to act immediately when problems arise and decisions must be made.

This first phase of planning (that which occurs before the receipt of a specific mission, or the formulation of primary or immediate objectives) is called forecasting. Forecasting is the process of estimating the future effects of current events or situations.

> EXAMPLE: Military leaders are frequently required to make estimates, which in this case are essentially forecasts, of the possible results of given courses of action:e.g., What would be the effect of an early release program? or What would be the effect of accepting low IQ recruits?

40. Which one of the following comes first?

- a. establishment of primary objectives
- b. establishment of intermediate objectives
- c. definition of activities
- d. forecasting
- e. preparation
- f. deployment

INTRINSIC PROGRAMMED INSTRUCTION

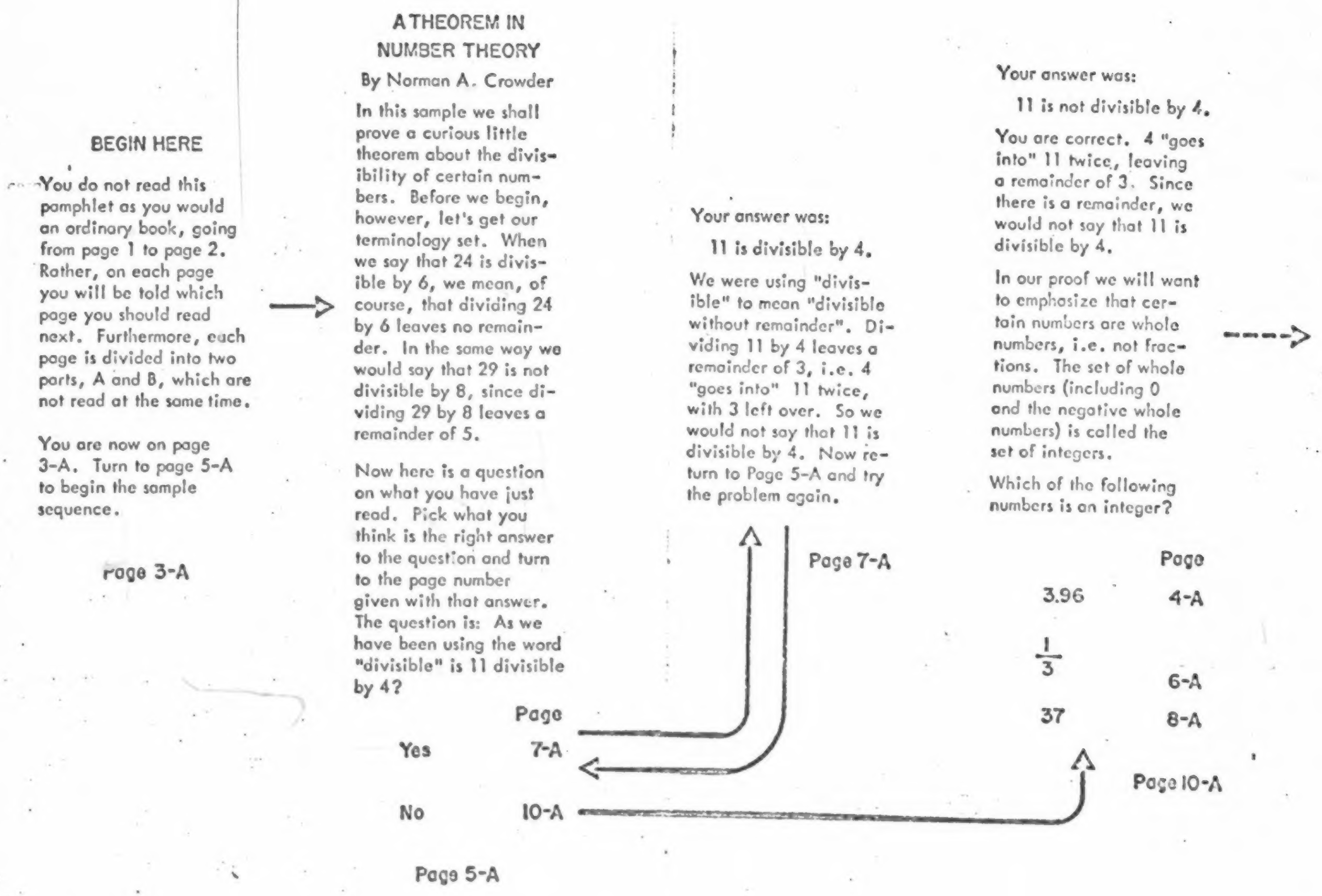
Another, and perhaps simpler, name for intrinsic programming is BRANCH programming. Unlike linear programming, all students do not take the same learning stream in a branching program. Upon choosing an incorrect answer, the student is routed to remedial frames, sometimes called a 'remedial subsequence,' and is eventually led back to the information to which he incorrectly responded, where he is given another chance to respond. For the student who makes all correct responses, the branching program will strongly resemble a linear program because the student will go from response on frame A to stimulus on frame B, to response on frame B to stimulus on frame C, et cetera, without ever being routed through a subsequence of remedial frames.

While different students will take different amounts of time to complete the same linear program because different people learn at different rates, the intrinsic program introduces different streams of learning for different students, so that some students may take as much as twice as long to complete an intrinsic program as other students.

Figure 2 shows a typical branch program layout. As in the linear frame, there is supplementary information (not actively responded to by the student), subject-matter information (stimulus), and a question about that information that requires the student to answer (response).

FIGURE 2

TYPICAL BRANCH PROGRAM LAYOUT



BEGIN HERE

You do not read this pamphlet as you would an ordinary book, going from page 1 to page 2. Rather, on each page you will be told which page you should read next. Furthermore, each page is divided into two parts, A and B, which are not read at the same time.

You are now on page 3-A. Turn to page 5-A to begin the sample sequence.

Page 3-A

A THEOREM IN NUMBER THEORY

By Norman A. Crowder

In this sample we shall prove a curious little theorem about the divisibility of certain numbers. Before we begin, however, let's get our terminology set. When we say that 24 is divisible by 6, we mean, of course, that dividing 24 by 6 leaves no remainder. In the same way we would say that 29 is not divisible by 8, since dividing 29 by 8 leaves a remainder of 5.

Now here is a question on what you have just read. Pick what you think is the right answer to the question and turn to the page number given with that answer. The question is: As we have been using the word "divisible" is 11 divisible by 4?

	Page
Yes	7-A
No	10-A

Page 5-A

Your answer was:

11 is divisible by 4.

We were using "divisible" to mean "divisible without remainder". Dividing 11 by 4 leaves a remainder of 3, i.e. 4 "goes into" 11 twice, with 3 left over. So we would not say that 11 is divisible by 4. Now return to Page 5-A and try the problem again.

Page 7-A

Your answer was:

11 is not divisible by 4.

You are correct. 4 "goes into" 11 twice, leaving a remainder of 3. Since there is a remainder, we would not say that 11 is divisible by 4.

In our proof we will want to emphasize that certain numbers are whole numbers, i.e. not fractions. The set of whole numbers (including 0 and the negative whole numbers) is called the set of integers.

Which of the following numbers is an integer?

	Page
3.96	4-A
$\frac{1}{3}$	6-A
37	8-A

Page 10-A

SYNDACTIC PROGRAMMED INSTRUCTION

Syndactic programs present the student with more subject-matter material at a time than do most other types of programs. For a given segment of content, there are three parallel versions (sometimes called modules) of a syndactic program:

1. Summary Booklet

   Pre- and Post-tests

   Programmed Sequences (Supplement A)

2. Summary Booklet (the same as in 1)

   Pre- and Post-tests (the same as in 1)

   Detailed Summary (Supplement B: a narrative version of the Programmed Sequences in Supplement A)

3. Summary Booklet (the same as in 1 and 2)

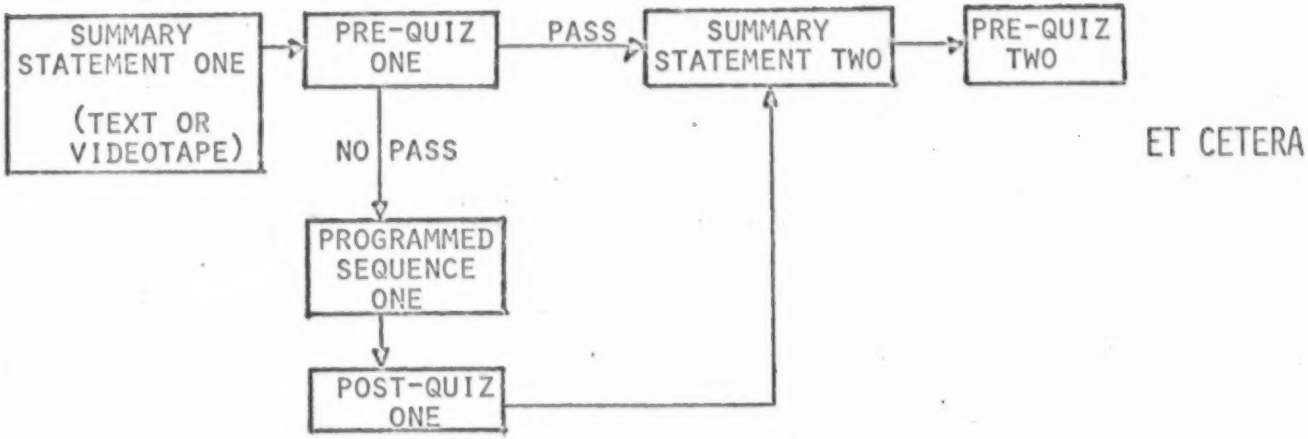
   Tests (only the pre-tests from 1 and 2)

The Summary Statements (in the form of a Summary Booklet), are the 'meat' of the segment's subject-matter. Since the content outline is itself the briefest possible presentation of the course's 'meat,' it follows that the summary statements often read like a narrative version of the content outline.

The learning stream for the first version, or module, of a syndactic program is shown is Figure 3. After reading the first part of the summary statement, the student is instructed to take the first pre-quiz. The first pre-quiz tests the student's knowledge of what he has just read in the summary statement. If he comprehends well enough to meet the behavior requirements of the terminal objectives, and

FIGURE 3

LEARNING STREAM --- SYNDACTIC TEXT OR VIDEOTAPE
(SUPPLEMENT A)


SUMMARY STATEMENT ONE
(TEXT OR VIDEOTAPE)
PRE-QUIZ ONE
PASS
SUMMARY STATEMENT TWO
PRE-QUIZ TWO
NO PASS
PROGRAMMED SEQUENCE ONE
POST-QUIZ ONE
ET CETERA

consequently scores well on the pre-quiz, then he is instructed to proceed to the second part of the summary. If not, then he is instructed to take the first programmed sequence. This is a series of linear frames that covers the content of the first part of the summary in great detail and depth. After completing the first programmed sequence, the student then takes the first post-test. The post-test is a scrambled version of the pre-test. After taking the post-test, the student is directed to read the second part of the summary. The same scheme is followed with the second and later parts of the syndactic text.

The learning stream for the second version, or module, of a syndactic program is shown in Figure 4. After reading the first Summary Statement from the Summary Booklet, the student takes the pre-quiz. If he passes, he goes on to the second Summary Statement. If he fails, he reads a Detailed Summary, which is a narrative form of the programmed sequence from Supplement A, minus the requirements for responding. Then the student takes the post-quiz, and proceeds to the second Summary Statement. This procedure continues throughout the second module of a syndactic program.

The learning stream for the third version, or module, of a syndactic program is shown in Figure 5. After reading the first Summary Statement, the student takes a quiz (the same as the pre-quiz in versions 1 and 2). Regardless of his performance of this quiz, the student proceeds to the second Summary Statement, thence to the second quiz, and so on throughout the third module of a syndactic program.

It must be kept in mind that all three versions of a syndactic program cover the identical content; only the presentation mode, the response demand frequency

FIGURE 4

LEARNING STREAM - - - SYNDACTIC TEXT OR VIDEOTAPE (SUPPLEMENT B)

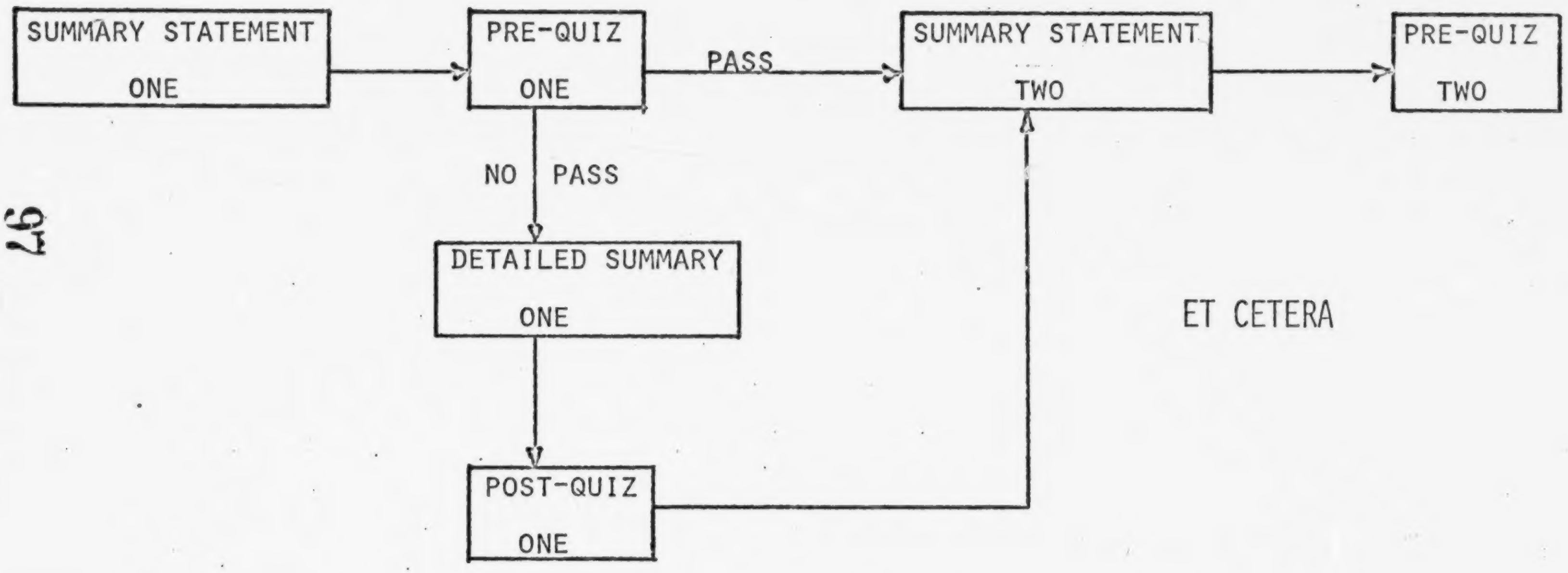
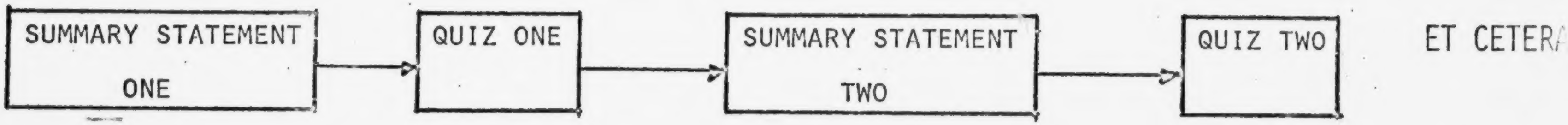

SUMMARY STATEMENT ONE
PRE-QUIZ ONE
PASS
SUMMARY STATEMENT TWO
PRE-QUIZ TWO
NO PASS
DETAILED SUMMARY ONE
ET CETERA
POST-QUIZ ONE

FIGURE 5

LEARNING STREAM - - - SYNDACTIC TEXT OR VIDEOTAPE (SUPPLEMENT C)


SUMMARY STATEMENT ONE
QUIZ ONE
SUMMARY STATEMENT TWO
QUIZ TWO
ET CETER

and the management frequency and type vary from module to module, and strictly for research purposes.

When the writer deems it appropriate, he may, to teach his objective, bend any of the programming rules.

The following eight pages contain a short glossary of the more widely-used terms in programmed instruction.

GLOSSARY OF GENERAL TERMS USED IN PROGRAMMED INSTRUCTION

This list was prepared under the direction of Dr. Robert Orlando of the University of Minnesota.

ABSTRACTION: A response to a single property of a complex stimulus. Example: Response "Carnivore" to picture of a German Shepherd.

ACCESS TIME: Amount of time elapsed in getting to an item in a program. In computer terminology this is the amount of time it takes the machine to search for a particular bit of information and produce it.

ADAPTIVE TEACHING MACHINE: Refers to teaching machines which automatically alter the instructional presentation sequence as a function of the pupil's performance. Example: The machine may shift to a smaller step size if the pupil is making more than four incorrect responses out of every ten frames.

ADAPTIVITY: The capacity of the teaching machine and its associated program to adjust in one or more ways, on the basis of the learner's responses, to his specific needs.

ADJUSTED-LEARNING METHOD - (See: Branching)

ASYNCHRONY: A method of presenting items in which (a) a changing stimulus requires the same responses or (b) a fixed stimulus requires changing responses.

Example of (a):		Example of (b):	
	5 + 3 = 8		8 = 6 + 2
	6 + 2 = 8		8 = 7 + 1
	7 + 1 = 8		8 = 5 + 3

AUGMENTING: A programming technique which builds a new concept or complex set of relationships by serially introducing bits of information in such a way that each is related to the other. Example: "John is not a woman." "John is a MAN." "John will die." "John is a person." "People who die are mortal." "John is a mortal." "John is a MORTAL MAN."

AutoTutor Mark II: A brand name (Reg. U. S. Pat. Off.) for a teaching machine produced and leased by U. S. Industries, Inc.

BINARY FRAME SELECTION: The simplest form of branching. There are at most only two alternative routes at any point in the program.

BRANCH: Any one of the alternative routes in a branching or intrinsic program.

BRANCHING: A style of programming in which selection of the next frame to be presented depends on the response given in the current frame. Example I: If an incorrect response is given, the following frame will consist of material which explains in detail why the given response is not correct, whereas if the original response is correct, the next frame presented consists of the next item in the sequence of subject matter. Example II: In a program designed to handle neurotic fears, the question "Which are you more afraid of, dogs, bears, or snakes?" could appear on one frame. Depending on the answer given (dogs, bears, or snakes), the program in the next frame would direct the user to one of three sequences.

CARTESIAN METHOD: An approach to handling complex problems which may be useful in programming subject matter. It involves essentially two activities: (a) analyzing the problem into its smallest parts, and (b) proceeding from the simple to the complex.

CHOICES: Refers to the selection of an answer from several alternatives presented to the student, as opposed to having the student construct or write out an answer.

CLASS-DESCRIPTIVE METHOD: A method of sequencing material in a program, in which the common and significant characteristics of a set of objects are simultaneously presented to the learner. (This is in contrast to the object-descriptive method.) Example: The heads of three different coins are presented side by side as one display - the tails of the coins as another display.

COLLATOR: Component of a teaching machine which measures and records the learning process by collecting and recording data such as the number of errors, the type of error, time intervals required for response, etc., in such a way that each item is collated with the part of the program to which it pertains.

COLLATOR-RECORDER: The component of a teaching machine which records number of errors, type of error, response latency, etc., by frame number.

COMPARATOR: Component of a teaching machine which judges the "correctness" of the pupil's response. This evaluation is then transmitted, depending on the mode of operation, to the pupil, the reinforcement dispenser, the collator, and/or the sequence control unit.

CONFIRMATION SEQUENCE: A sequence in which the learner (a) sees the cue-stimulus, (b) makes the response, and (c) sees the confirmation. This is typical of a memory drum.

CONSTRUCTED RESPONSE. A response which is chosen from a virtually unlimited number of alternatives based on the student's past experience. The response, however, may be limited to a general type, such as words or numbers. The constructed response is contrasted with a response to a multiple-choice question.

CONSTRUCTION: The process of requiring the subject to write out or prepare an answer as opposed to choosing one of several alternative answers.

COPYING FRAME: A type of frame which uses the "copying" programming technique to elicit the correct response under appropriate conditions. The pupil merely duplicates the response portion of the frame, which is given in full.

CORRECTION PROCEDURE: Under correction procedure a pupil is required to make a correct response to a frame before he is permitted to continue.

CRITERION PROGRAMMING: The subject matter is not programmed; instead, programmed instructions direct the student to resource materials from which he returns for a test of the material (criterion test) and his next instructions.

CUE STIMULUS: The material (problem, statement) which precedes the blank in a frame. The task of the learner is to make the correct response to the cue-stimulus.

CUMULATIVE DENSITY: The density of any portion of a program in its relation to materials which have been presented in preceding lessons.

CUTBACK-PAGE BOOKLET: A booklet designed with each succeeding page narrower than the preceding one. An answer sheet is placed under the smallest page so that its right edge extends beyond the rest of the text, providing blanks for responding to frames in the text. The correct answers are printed on the answer sheet in a position such that the frames to which the answers belong are on a page above the answer sheet which must be turned to expose the answers.

DENSITY: The rate at which new material is introduced. It is the ratio of the number of different responses required of the learner to the total number of responses required. Density is independent for a single set of frames and cumulative for a sequence of sets. If all the responses are different, the density is 1.00.

DIFFERENTIAL PROGRAMMING: In differential programming, variation in the program is a function of pupil characteristics.

DISPLAY: Presentation of subject-matter information to the learner by a teaching machine. May utilize visual, auditory, or tactile communication channels, or combinations of these.

DISPLAY MECHANISM: The unit of a teaching machine which presents the content material in a series of frames.

DOVETAILING: A technique used in programming which involves the interlacing of associations into a pattern consistent with that required when the information concept or skill is put to use. Example: "If $5 \times 5 = 5^2$, and $7 \times 7 \times 7 = 7^3$, $N \times N =$ _____?"

DROP-OUT: Feature of a teaching machine constructed so that when the student responds appropriately to a given frame, that frame is omitted on subsequent repetition of the program.

ERROR: An incorrect or inappropriate answer to a specific item in the program.

ERROR RATE: Refers to the number or percentage of a given group of subjects incorrectly responding to a specific item on the program. A high degree of error would probably indicate a need for revision in the program.

EXTRINSIC PROGRAM: Synonymous with the term "linear program."

FADING: A technique used in programming: the gradual withdrawal of stimulus support. Fading can be done in intact units (all materials to be faded can be dropped out at the same time) or portions can be faded progressively. This technique lends itself especially to material where visual discriminations are important; for example, map reading.

FEEDBACK: The function of a teaching machine which consists of providing the pupil with "knowledge of results."

FORCING: The presentation of subject matter in such small steps as to assure a correct response by the learner.

FRAME: A unit of a program; the segment displayed at each step in the sequence. Usually the unit that requires a response.

FRAME, FORCED: A stimulus frame presented to the student forcing him to respond correctly by making the answer obvious.

FRAME, TERMINAL: A frame having no prompts, located at the end of a sequence, designed to test whether the student has reached "terminal behavior."

HARDWARE: Slang term referring to mechanical teaching devices.

HINTS: Devices used to direct the student's behavior in the desired direction. Used to increase the likelihood of a correct response.

ITEM: Any single unit of a test or experiment - e.g., a single question on a test or a single nonsense syllable in a list of syllables.

ITEM, AUGMENTING: An item supplying new information but not requiring the student to make a relevant response.

ITEM, DELAYED REVIEW: An item which allows for the distribution of practice. Differs from other items only in terms of presentation.

ITEM, DOVETAILING: An item requiring the student to make separate responses to separate stimuli which otherwise may become confused.

ITEM, FADING: An item requiring the student to review what has been presented. In addition the item withdraws information successively. Similar to Skinner's "vanishing technique."

ITEM, GENERALIZED: Items which summarize the common characteristics of several specific items already presented to the student; e.g., after learning in previous items that "I, you, he," are pronouns, he is given the problem "all words which are used in place of a noun are called ________."

ITEM, INTERLOCKING: An item that requires a student to review the established skills while new information is being presented.

ITEM, LEAD IN: An item not requiring new information or rehearsal of the skill where a problem is restated.

ITEM, RESTATED REVIEW: An item requiring a rehearsal of the skill where a problem is restated.

ITEM, ROTE REVIEW: An item presenting a problem identical to one presented earlier.

ITEM, SPECIFYING: An item which exemplifies a general rule or principle.

ITEM, SUBJECT MATTER: An item classified with respect to its subject matter content.

ITEM, TAB: A specialized term referring to the technique of having the subject pull a tab to indicate his response, instead of writing out an answer or selecting a choice.

LEADING: The student is first asked to talk about familiar things using his everday vocabulary. He is then led to discuss relations among these. Technical terms are then slowly inserted.

LIBRARY UNIT: A component in a teaching machine used to store the program. The selector unit picks items to be presented from the library unit.

LINEAR PROGRAM: A program which has a single, predetermined sequence of steps. Error responses are not corrected or immediately repeated. A drop-out device can be incorporated into the machine whereby errors may be reviewed at the end of the set sequence.

MATCHING: Procedure used in some Skinner machines to inform student of correctness of his response. After writing his response, the student moves a lever which exposes the correct answer with which the student compares or "matches" his response.

MATHETICS: An approach to programming designed by T. F. Gilbert. It is an attempt to establish a set of rules or guidelines for analyzing and writing programs.

MIN-MAX: (minimum complexity... maximum function). The trade name of a teaching machine distributed by Grolier, Inc.

OBJECT-DESCRIPTIVE METHOD: A method of sequencing material in a program in which a complete object is presented and the different components of interest are pointed out or identified. (This is in contrast to the class-descriptive method.) Example: The word "dime" and the tail, head, and side view of a dime are presented in one display.

OBJECTIVE: An objectively defined goal toward which instruction is directed. The pupil is expected to reach this goal by the end of the instructional unit. Example: A "driver education" course may have as an objective: To qualify for a driver's permit by passing, with a score of at least 70%, a true-false and multiple-choice test on road signs and rules.

OVERPROMPTING: Undesirable feature of some programs in which a text of frames has an excessive number of prompts. The student is likely to become overly "dependent" on program-supplied responses, making weaning more difficult.

PACE: The rate at which the subject is permitted to work through the programmed material. (The pace may be determined by the learner or by a pacer.)

PACE, PACING: Time intervals in instruction. Two crucial intervals are: (a) between presentation of a cue or question and presentation of the correct information or answer, and (b) between one cue or question and the next. (See: Pacing, self.)

PACED-PRACTICE MODE: A mode of operation of a teaching machine in which a timer limits the time durations. Example: The time of presentation is limited, or the time for a response is limited.

PACER: 1. Component of a teaching machine which limits the time intervals (a) between presentation of a cue or question and the presentation of the correct information or answer and/or (b) between one cue or question and the next. 2. A type of stimulus-response device which presents stimulus materials for a given interval of time and then provides the appropriate response, whether or not the learner has attempted to answer. Example: Memory drum.

PACING, CONTROLLED RATE: Control of the subject's rate of responding by features of the mechanical device utilized to present the program.

PACING, SELF: The rate at which the subject might complete the material at his own rate , depending upon success on the previous steps.

PANEL: A short passage of prose material, graphs, and similar material which is presented or studied along with the discs in the Skinner device.

PANEL (EXHIBIT): Supplementary display of information to be referred to by the pupil as he responds to a set of frames.

PRACTICE MODE: A mode of operation of a teaching machine in which the student continues to make responses to a frame until he makes the correct response. After each response the student is told whether he is correct or not. (See also: Correction Procedure)

PRESSEY DEVICE: The earliest known device (1926) originally developed for use with multiple-choice tests. Device could be set so that items missed could be skipped or repeated until success was established, a raw score obtained, and an item analysis or error count secured.

PREVERBAL MACHINE: A machine which presents frames in the form of pictures or figures which may be matched or contrasted; no words are used in the frames presented. Such programs can be used with pupils of pre-reading age.

PROGRAM: An arranged set of frames in a given subject.

PROGRAM, EXTRINSIC: A term usually applied to Skinnerian (linear) programs. The program proceeds in small steps from simple levels to complex levels in a predetermined order of frames.

PROGRAMMED BOOK: A special book in which the subject matter to be learned has been arranged into a series of sequential steps leading from familiar concepts to new materials. Differs from a "scrambled text" in that the content is arranged so that the student proceeds directly from one step to the next, or one succeeding page to the next, rather than skipping around. The student generally is asked to construct a response as opposed to making a choice among alternatives.

PROGRAMMED TEXTBOOK: A book requiring the learner to construct responses to the systematically arranged materials. It follows the linear approach (Skinner). Example: Page 1 gives the stimulus and requires a constructed response while page 2 gives the feedback (reinforcement), and presents a new stimulus requiring another constructed response... and on to page 3.

PROGRAMMING: The process of arranging the material to be learned into a series of sequential steps; usually moves the student from a familiar background into a complex and new set of concepts, principles, and understandings.

PROGRAMMING, INTRINSIC: A method of programming materials that directs the erring subject along certain corrective pathways before he is permitted to proceed to the next step in the program. Requires that each step contain multiple-choice answers.

PROMPT: Programming technique designed to insure the desired response to a frame.

PROMPT, EMPHASIS: One of the cues or stimuli employed for insuring correct responses. An emphasis prompt is usually an underlined word or phrase written in capital letters to give it emphasis. Example: (a) PARIS is the capital of France. The capital of France is __________.

PROMPT, FORMAL: A prompt which provides the pupil with cues to the appearance of the required response: i.e., the way the response "looks." Example: "The capital of France is P---S." The "P," the number of dashes, and the "S" are formal prompts.

PROMPT, SEQUENCE: One of the cues employed for insuring correct responses. The sequence prompt may be one of two formats: (a) If a pupil reads a text in one item and gives one of the words in the next item, the sequence prompt is a function of what the student had just read or seen. (b) If a student copies a model in one item, and repeats the response without a model in the next item, the sequence prompt is a function of what the student had just written or produced.

PROMPT, THEMATIC: A prompt which depends for effect upon previous associations in the pupil's repertoire. Example: Canis Familiaris is man's best friend. Canis Familiaris is the technical name for the animal commonly called a ______. The phrase "man's best friend" means "dog" to most people. The phrase "man's best friend" is the thematic prompt.

PROMPTING: The method or sequence of providing verbal and symbolic cues to encourage responses. Can be visual, verbal, symbolic, or auditory.

PUNCHBOARD DEVICE: A unit containing rows of holes to use in selecting a multiple choice response. The student punches through a paper with a pencil or stylus. If the response is correct, the pencil goes completely through the paper. If it is incorrect, a backing plate prevents the pencil from going through completely.

PURE-PART METHOD: A method of sequencing programmed instruction in which each part is first learned separately to a criterion of mastery. Subsequently the parts are repeated until the whole has been brought to the criterion already achieved by each part.

"QUICKENING" PROCEDURE: Giving the student knowledge of the results of his response while he is still in the process of making the response. Example: After writing the first one or two letters of a response word, the student would be told he is incorrect.

QUINTAIN: A medieval teaching machine used to train knights. The appropriate response was to strike a shield directly in the center with a lance. If the lance struck off center, the device would deliver feedback by striking the horseman a blow as he rode by.

RECYCLING: A machine function which returns the student to a previous part of the program.

REINFORCEMENT, MECHANISM: Some type of reward for responding correctly to the items in the display. A motivational factor causing the individual to keep working at the set of materials. Sometimes considered as an integral part of the confirming mechanism.

REINFORCERS, PRIMARY: A class of stimuli which will, without any prior history of training, reinforce operant behavior.

RELATIONAL GUIDANCE: A technique used when a principle is to be applied in a variety of contexts, each requiring a different objective response.

RESPONSE MODE. The kind of response the pupil makes while working on a program. Examples: writing the answer, pushing a button, pressing a panel, etc.

ROTE REVIEW: Repetition of a frame presented earlier in the program. This type of presentation is useful mainly where sheer memorization of verbal material is desired. Such items are usually presented out of sequence.

RULEG: A system in programming which consists of a statement—such as a rule, principle or definition—followed by one or more examples. The statement and examples may occur in the same frame or in a series of frames.

SCRAMBLED BOOK: (See: Scrambled Textbook)

SCRAMBLED TEXTBOOK: A programmed textbook arranged according to the branching method of programming. If a correct response is made to a question, the learner is referred to a page in the book which confirms his response and moves him on in the program. If the response is incorrect, he is referred to another page which given him remedial attention. Eventually he is returned to the question that he missed, and he tries again. Since the pages are not taken in order, it is called a "scrambled textbook." Each frame presents a multiple choice question; each of the several answers directs the student to a different page.

SEEDING: Inserting review materials at intervals in a program. These reviews may be either regularly spaced (periodic) or irregularly spaced (aperiodic).

SELECTOR UNIT: The component of a teaching machine which compares the pupil's response with the correct response.

SEQUENCING: Arranging the frames of a program in an order that provides the most efficient situation for learning.

SET: A series of frames in the program dealing with one information unit.

SHAPING: The building of a behavior or set of behaviors through the differential reinforcement of progressively more adequate forms of behavior. (Skinner)

SIMULATOR: A type of stimulus-response device which duplicates the essential characteristics of some complex task and which requires appropriate action from time to time on the part of the learner. Ordinarily, this type of device does not provide immediate feedback. Example: Electronic flight simulator.

SINGLE-ERROR-PERMITTED MODE: A mode of operation of a teaching machine in which the student makes a single response to a frame. Then he is told if the response is correct or not, and if the response is incorrect, he is shown the correct response.

SINGLE-TRY MODE: A mode of operation of a teaching machine in which the pupil is allowed only one response to each frame. The next frame is presented whether the response was correct or not.

SKINNER DEVICE: A mechanical device which presents a set of programmed materials. At each step the subject must construct an answer and evaluate its correctness with a model answer before proceeding further in the program. Generally considered the forerunner of later model "teaching machines."

SKINNER DISC: A round, flat, record-like device which contains a set or series of program materials for the Skinner device. Contains the questions to be answered, and spaces for recording student's answers and the correct response, as well as for making a record of successful or unsuccessful performance.

SKIPPING: Termination of program prior to the final item of a subset and going on the next topic. If the student's response is correct on a key frame, the student is directed to the next set: he "skips" a portion of the program.

SOCRATIC METHOD: A method of instruction which consists of a conversational quiz in which a tutor asks questions, the student replies, and the tutor confirms or denies the answer. If a response is incorrect the tutor leads the student by a series of questions to the correct response.

SPECIFYING ITEMS: Items which exemplify a general rule through specific examples, e.g., after a student has been told that the symbol ÷ means "divided by," he is given a problem: 4 ÷ 2 ________. Response to this item is "4 divided by 2."

STABLE SEQUENCE: Refers to the sequence in a serial-learning task, such as learning the letters of the alphabet. It is stable because the order of stimuli and responses remains fixed and predictable.

STEP: The increment in subject-matter level to be learned with each succeeding item or frame in the program.

STEP SIZE: Average amount of difference between successive frames. A function which is inversely proportional to the number of frames in an instructional unit.

SYNCHRONY: Both stimuli and responses change from item to item in the series, or neither the stimulus nor the response changes from item to item. Example of the latter type is repetition.

TEACHING AIDS: Devices useful in the teaching process which do not assure learning either because they do not necessarily require any action on the part of the learner when he is presented with the subject matter, or they permit him to practice some activity but do not necessarily provide him with subject matter on which to practice.

TERMINAL BEHAVIOR: The behavior a program is designed to produce. (See: Objectives)

TEST MODE: An operational mode of a teaching machine which will provide the display unit, the response unit, and the program, but will not provide feedback to the student. E.G., Pressey's Drum Tutor is a testing device.

TRACK, MULTIPLE: A provision within the programmed material for allowing subjects to pursue alternative sub-divisions of the program in terms of their successes or failures with earlier sections of the sequence. (See: Branching)

TRACK, SINGLE: A common set of programmed materials which all subjects work through, there being no alternative program such as in the multiple-track situation. (See: Linear)

UNSTABLE SEQUENCE: Refers to the arbitrary and unpredictable order between items in a paired-associates learning task such as learning a French-English vocabulary. (See: Stable sequence)

VANISHING: A form of fading in which the prompt is gradually removed by making it progressively less discriminable.

WEANING: Behavioral goal of the fading technique. Training of the pupil to make "independent" responses to stimuli which were previously accompanied by prompts.

APPENDIX M.

MANUAL OF STYLE

THE PURPOSEFUL USE OF WORDS

The central concern of this brief manual of style is to set forth uniform standards for the preparation of finished copy. Before going into the many details involved, it may be helpful to consider style in its broader meaning --the purposeful use of words--and to make a few suggestions on that use.

Write straight to the point. Our point in preparing the course materials is to be unmistakably clear, so that the student's learning moves from the established and known point to the unfamiliar or heretofore unknown point. To reinforce newly learned material calls for frequent repetition and unmistakable confirmation. These processes gain force as the instruction is set forth in language that is clear, simple, and direct.

Early in this century a great and discerning British professor discussed with his Oxford students the problem of forming a manly prose style. In a famous lecture on jargon, he counseled them against using meaningless combinations of words that merely fill up space but say nothing. He reminded them of the time-honored precept that the concrete noun and the active verb mark a masculine (that is, a vigorous) style.

Much of any text on a subject such as leadership must concern itself with abstract generalizations and effects received--too often vague abstractions strung up flabbily on passive verbs. Translate the abstract, as you write, into the physically specific--things you can see, touch, hear, smell, taste. Translate the flabby passive into the stalwart active. Remember that your audience is midshipmen--young, vigorous, success-minded, eager to learn now to act for effective leadership in a world of men. The prose you use can mirror and promote that aim.

SUGGESTIONS FOR WRITERS

The course includes material presented in various media. Some points require particular attention.

In the linear programed high response demand frequency texts, each frame requires a response. Frames should therefore end with a direct question (e.g., "Which of the statements below is true?") or a clear order ("Choose..," "Match..," etc.). In the low response demand frequency texts, frames requiring no overt response should be expressed as statements, and only those requiring a clearcut choice (usually one frame in ten) should be phrased as questions.

Summary texts should be exactly what the name implies: brief summaries of the course treatment of a major topic, which, when clearly understood and retained, make it possible to bypass the more explicit and detailed programed sequence on the same topic.

Audio-visual materials must be constructed with due regard to the way they are to be used. Explanations should be so clear that the student who understands them will move confidently to the right response. Allowing for inevitable error, the writer must provide the incorrect choices with a discussion of the errors and a directive to choose again. Scrambling the responses is a problem. Responses must occur in a scrambled sequence that suggests complete irregularity in spacing. At the same time, the writer should work out the scramble pattern so that the student need never flip more than five or six pages in either direction to reach the chosen response or the next stimulus.

The video tape integrates visual materials instantaneously during a presentation. The writer of a video tape script is constructing his prose not for the eye, but for the ear. Write as you talk. Use phrases...remember we do not talk in sentences all the time. Especially avoid compound and complex sentences. They only serve to confuse the viewer. The viewer generally is not in a position to go back each time he does not understand a sentence. Make the point clear on the first go round. If a concept or idea is difficult to understand, break it down and explain it, part by part.

Have the scripts put on audio tape. Awkward wording will show up when you play the tape back.

The writer should work closely with the A-V Department on the proposed use of visuals.

COPY PREPARATION I

For all copy preparation the most familiar guide is the dictionary.

The dictionary spells and defines words. It divides them into syllables. It shows how they are pronounced. It distinguishes among meanings. It gives clues to the origins or derivations of words and thus to shades of meaning. It suggests synonyms and antonyms. It discloses levels of usage--whether the word is used in contemporary decent American speech or is obsolete, localized, slang, or vulgar.

But a good dictionary does all these things and more.

The large dictionary here is the unabridged Random House Dictionary of the English Language, copyright 1967. Examine the table of contents to find out what the book includes besides an alphabetical list of words with their meanings.

Preceding the straight dictionary are short essays on such topics as the history of the English language, its usage, its pronunciation, its etymology, etc.

Following the dictionary proper are 33 brief sections of miscellaneous but useful information. There are, for example, consise French, Spanish, Italian, and German dictionaries to and from English; basic American political documents; significant dates and events; lists of major reference works in various fields; geographical and political facts; an atlas; and--to our immediate purpose--a style manual.

Explicit rules defining standard American practice in purely stylistic matters, from general guides for copy preparation to fine details of spelling and punctuation, are explained and exemplified in the U.S. Government Printing Office Style Manual. Our office copy is the abridged manual, revised January 1959. In the following pages, references to GPO are to chapters or paragraphs of this edition of the manual. Every staff member should examine the manual and learn how to use it. The instructions which follow deviate in only a few details from the standards set forth by GPO. Such deviations are noted as they occur.

COPY PREPARATION II

COVER PAGE

The cover is printed on stock the color of which varies from phase to phase; for Phase II, blue; for Phase III, tan. Items that are the same on all covers are uniformly printed. Those items identifying the particular text are labeled in the box. Copy for this box is prepared along with the text. It consists of 5 lines, all centered, typed on a separate sheet and clearly marked at the top to indicate what it is: "Cover Copy." This is not camera-ready copy, but is a guide for the typesetter.

Note the arrangement on the attached sample cover. The first line spells out the part, all caps; the second, the part title, all caps. Double space for the third line, which gives the word "Segment" (initial cap only) followed by its number in roman capitals. Single space for the next line, initial caps only. Double space to the fifth line, initial caps only, designating the kind of module.

APPENDIX N.

EXTRACT 6.3a
RESEARCH SPECIFICATIONS
TO THE WRITERS

4.2.1.2 Design and Procedure. The design for testing Hypothesis I has been described in Section 3.2.2, for the purpose of overviewing the basic rationale and methodology of the proposed research. In this section, that description will be amplified and completed.

For the sake of continuity, the outline of the design (Figure 6) is reproduced below.

			CPT UNITS			
			Unit 1	Unit 2	Unit 3	Unit 4
GROUPS OF STUDENTS (Rows)	Videotape	Row 1	high RDF, covert RD (module A)	low RDF, overt RD (module B)	low RDF, covert RD (module C)	high RDF, overt RD (module D)
		Row 2	low RDF, overt RD (module B)	high RDF, covert RD (module A)	high RDF, overt RD (module D)	low RDF, covert RD (module C)
	Audiotape with Panel-book	Row 3	low RDF, covert RD (module C)	high RDF, overt RD (module D)	high RDF, covert RD (module A)	low RDF, overt RD (module B)
		Row 4	high RDF, overt RD (module D)	low RDF, covert RD (module C)	low RDF, overt RD (module B)	high RDF, covert RD (module A)

MODULE CHARACTERISTICS

Module A: high RDF, covert RD

Module B: low RDF, overt RD

Module C: low RDF, covert RD

Module D: high RDF, overt RD

Figure 6. Repeated Measures Half-Plaid Square Design for Testing Hypothesis I

As shown in Figure 6, each student will be randomly assigned to one of four experimental groups. Two of these groups will receive videotaped lectures in each of the four experimental combinations of response-demand frequency and response demand. The other two groups will receive audiotaped lectures in each of the same presentation combinations.

In each CPT Unit, the audio portion of the videotaped lectures will be used as the audiotape presentation. Charts and other necessary visual aids will be represented on the viewing screen in the videotape condition, and will be referenced by the "off-screen" lecturer. In the audiotape condition, the lecture will be altered very slightly, so as to reference the visual aids in the panelbook.

In the high RDF modules, the lecturer will ask a question after each small "frame" unit of content (approximately twenty questions for each 50-minute segment). These will include simple questions on small units of content, and summary questions (criterion questions) on larger units of material.

In the low RDF modules, the lecturer will ask only the criterion questions during each segment.

In the overt RD modules, students will be instructed to write their answers on prepared answer sheets. In the covert RD modules, students will be instructed to "think of the answer," but not to indicate that answer in an overt form.

A summary illustration of the module specifications for Hypothesis I is shown in Figure 8 below:

APPENDIX O.

CONTENT OUTLINE
TERMINAL AND
ENABLING OBJECTIVES

United States Naval Academy

INTRODUCTION TO PSYCHOLOGY AND LEADERSHIP

PART THREE

GROUP DYNAMICS

Content Outline

Terminal and Enabling Objectives

May 1971

WESTINGHOUSE LEARNING CORPORATION
Annapolis, Maryland
1971

United States Naval Academy

INTRODUCTION TO PSYCHOLOGY AND LEADERSHIP

PART THREE
GROUP DYNAMICS

Segment I
Characteristics of Groups

WESTINGHOUSE LEARNING CORPORATION
Annapolis, Maryland
1971

CHARACTERISTICS OF GROUPS

A. Goal Orientation

1. Group: Any collection of people who are related to each other by some common interest or attachment (Hays and Thomas, p. 148). Whereas a group is a collection of two or more interacting individuals with a common purpose, an organization is a large, fairly permanent social system designed to achieve limited objectives through the coordinated activities of their members. (Presthus, The Organizational Society, p. 4)

2. All leadership acts are directed toward the attainment of a specified goal or goals. Goals may be classified into:

   a. Organization goals

   b. Group goals

   c. Personal goals of the follower, i.e., group member

   d. Personal goals of the leader

   (Tannenbaum, Weschler, and Massarik, pp. 28-29)

3. Effective and efficient goal accomplishment requires that the leader help the group:

   a. To make progress toward its organization goals (task role)

   b. To remain in a healthy working condition (group maintenance role) (Lippitt, p. 25; Hays and Thomas, p. 44)

   (NOTE: It is not likely that both the task role and the group maintenance role will be performed by the same leader.)

B. General Characteristics of Groups

Groups differ in a number of dimensions.

1. Size, or the number of members

2. The degree to which they are organized and operate in a formal manner

3. The degree to which they are stratified, i.e., the degree to which group members are related to one another in a hierarchy

4. The degree to which they exercise or attempt to exercise control over the behavior of their members

5. The degree of participation which is permitted, expected, or demanded of members

6. The ease of access to membership in the group and the ease with which a member can leave or be expelled from the group

7. The degree of stability of the group over time and the continuity of its membership over time

8. The degree to which group members relate to one another intimately, both on a personal basis and with respect to a wide range of activities and interests

9. The degree to which the group is subdivided into smaller groups or cliques, and the extent to which such cliques are in conflict with one another

(Morgan and King, pp. 577-578).

C. Social Groups: Groups which exist to promote the psychological well-being, enjoyment, or adjustment of the individuals who are members of the group (Fiedler, p. 16)

1. Primary group: That membership group from which an individual derives most of his pleasure, influence, expectations, and emotional support. (Primary groups change as an individual matures.) (Hays and Thomas, pp. 148-149)

    a. Characteristics of primary groups (Hays and Thomas, pp. 148-149)

        1) Small in size, i.e., number of members is limited

        2) Frequent member interaction

        3) Considerable intimacy and participation

    b. Examples of primary groups

        1) Family group, e.g., parents, brothers and sisters

        2) School friends or neighborhood peers

        3) Team members, e.g., USNA athletic teams

        4) Work group or contemporaries, e.g., shipmates

c. Socialization of the individual (Morgan, p. 484)

  1) The individual learns to behave as prescribed by his primary group and to adjust in relationships with other people.

  2) Example of socialization: Initially a child's behavior is determined by positive and negative consequences provided by the family group, as for example, in the learning of table manners. As the child matures and his primary group changes, he learns to respond to new sources of stimulation in his environment. New responses are demanded of the individual and his behavior will depend on the new consequences which are provided.

2. Secondary group: Usually large-scale associations, such as church organizations, business corporations, or military organizations which influence an individual's behavior by providing new discriminating stimuli and demanding new responses to them (Hays and Thomas, p. 149)

3. Concepts of peer and reference groups (Hays and Thomas, p. 149)

  a. Peer group concept holds that individuals are more directly influenced by their peers than by other elements of their environment.

    1) Individual's behavior is shaped by his peers, who reinforce responses consistent with those of the group.

    2) Examples of peer groups may be: Ensigns aboard a carrier, Midshipmen of one class.

  b. Reference group concept is based on a "frame of reference" idea and is concerned with the source of an individual's inferences about various aspects of his world. (NOTE: A reference group may be a peer group)

    1) Individual learns to see or hear stimuli that the reference group is responding to and is differentially reinforced for making the appropriate response; e.g., a recruit hears Naval jargon and is positively or negatively reinforced when he talks by encountering verbal approval or disapproval.

    2) Reference group may be:

      a) An actual one in which the individual is a member, such as a gun mount crew

        b) One that he aspires to join, identifies with, or holds in high esteem, such as a Navy UDT outfit

        c) One to which he feels dedicated or obligated, such as ancestral Naval heroes

D. Task Groups: Groups which exist for the purpose of performing a task and which generally are subunits of a larger organization (Fiedler, pp. 7, 16, 18-20)

1. Interacting groups: Groups which require the close coordination of several team members in the task. In work coordination, each member of the group provides discriminating stimuli to the other members; they, in turn, must respond correctly in order to accomplish the task.

    a. High interdependence of group members: Each man must do his part if the team is to be successful.

    b. Need for coordination of task functions or group's activities by the leader.

        1) Coordination so that the work proceeds without interruption

            a) Leader must ensure that each member of the group, upon completion of a particular task, is able to respond to new stimuli presented by another aspect of the overall task.

            b) If the response to the new stimuli is not automatic, the leader must provide a guidance tool, such as a checklist, in order that each group member knows where to look so as to respond appropriately.

        2) Coordination so that men working together do so harmoniously

            a) The time pressure basis of some tasks demands high interdependence of the group members. Each member must provide his own discriminative stimuli and discriminative stimuli to others to accomplish the task.

            b) The consequences of making the incorrect response, i.e., attending to the wrong stimuli, are generally punishing and in some cases disastrous.

c) Examples of interacting groups

(1) Interrelated activities of a great number of men to run a destroyer

(2) Interrelated activities of a tank crew, such as maneuvering the tank, loading, and aiming and firing the gun

2. Co-acting groups: Groups that work together on a common task, but in which each of the group members does his job relatively independently of the other members, i.e., discriminative stimuli are not being provided by other group members.

a. Low interdependence of group members. Each group member is on his own, and his performance depends on his own ability, skill, and motivation.

b. Little need for coordination by leader. Instead, the major purposes of leader are:

1) Development of individual-member motivation and the individual training which will enable each member to perform up to his ability

2) Prevention of destructive rivalries and competition

c. Example of a co-acting group: A rifle marksmanship team, in which the score of the team is the sum of each member's score.

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Outline Reference	Terminal and Enabling Objectives	
A.3.	Given a description of a military situation in which a leader is providing aid to his group, the M will be able to select from several choices the correct objective of that aid.	TO 1
A.1.	The M will be able to select from several choices the definition of a group.	EO-1
A.2.	Given a description of a military goal, the M will be able to classify the goal as an organizational goal, personal goal, group goal, personal goal of the follower, or personal goal of the leader.	EO-2
A.3.a.	Given several descriptions of statements that a leader might make to his subordinates, the M will be able to identify the statement which indicates that the leader is helping his group make progress toward their organization goals.	EO-3
A.3.b.	Given several descriptions of statements that a leader might make to his subordinate, the M will be able to identify the statement which indicates that the leader is helping to keep his group in a healthy working condition.	EO-4

Outline Reference	Terminal and Enabling Objectives	
B.	When given a description of a group, the M will select from several choices the statement(s) that describe(s) the group, based on his knowledge of each of the dimensions in which groups may differ.	TO 2
B.4.	Given examples which illustrate characteristics of groups, the M will be able to identify the example in which the group exercises control over the behavior or its members.	EO-1
B.5.	Given examples which illustrate characteristics of groups, the M will be able to identify the example which illustrates how groups may permit, expect, or demand participation of members.	EO-2
B.9.	Given examples which illustrate characteristics of groups, the M will be able to identify the example indicating the formation of cliques which may come into conflict with one another.	EO-3
C.1. C.2.	Given the instruction to evaluate the distinctions between primary groups and secondary groups, the M will be able to select from several choices the factor(s) or characteristics(s) which describe(s) this distinction.	TO 3

Outline Reference	Terminal and Enabling Object	
C.1.	Given examples of social groups, the M will be able to identify the example which correctly describes a primary group in terms of its primacy in providing emotional support.	TO 4
C.1.a.	The M will be able to identify from several choices the characteristics of primary groups.	EO-1
C.1.	The M will be able to select from several choices the definition of primary groups.	EO-2
C.2.	The M will be able to select from several choices the definition of secondary groups.	EO-3
C.1.c.	Given a description of the characteristics of a plebe's primary group and the manner in which reinforcement and punishment is provided by a Plebe Summer environment, the M will select from several choices the paragraph that describes the probable adjustments required of the plebe. (Based on the principle that the individual must respond to new sources of stimulation in his environment)	TO 5
C.1.c.	Given examples of individuals responding to new sources of stimulation in their environment, the M will select that example which indicates positive socialization of the individual.	EO-1

Outline Reference	Terminal and Enabling Objectives	
C.1.c.	The M will be able to identify from several choices the statement that describes socialization of the individual.	TO 5 EO-2
C.3.	The M will be able to select from several choices the characteristics (or factors) which are relevant to either peer or reference groups.	TO 6
C.3.a.	Given examples of various groups, the M will be able to determine which reflect the characteristics of peer groups.	EO-1
C.3.b.2)	The M will be able to select from several choices the statement that describes the basis of the reference group concept.	EO-2
D.1.2.	The M will be able to evaluate a description of a group engaged in an activity, and on the basis of the evaluation, will select from several choices the statement which identifies the type of group being described.	TO 7
D.	Given several examples of groups the M will be able to select the example which best illustrates a task group.	EO-1
D.1.	Given several examples of task groups, the M will be able to identify the interacting group.	EO-2

Outline Reference	Terminal and Enabling Objectives	
D.1.b.	The M will be able to select from several choices the statement which describes the two major coordination requirements to be provided by a leader commanding an interacting group.	TO 7 EO-3
D.2.	The M will be able to select from several choices the characteristics of co-acting groups.	EO-4

United States Naval Academy

INTRODUCTION TO PSYCHOLOGY AND LEADERSHIP

PART THREE
GROUP DYNAMICS

Segment II
The Relation of the Leader to the Group

WESTINGHOUSE LEARNING CORPORATION
Annapolis, Maryland
1971

THE RELATION OF THE LEADER TO THE GROUP

A. Group Dynamics and the Leader (Bradford, pp. 5-7)

1. Definition: The forces, both intrinsic and extrinsic to the group, which determine the behavior of the group and its members (Bradford, p. 5)

2. Importance of understanding groups. A leader cannot direct his own behavior or that of his group in the most effective way if he lacks an understanding of the principal social and psychological forces which are affecting the group.

3. A leader's job of understanding a particular group consists of:

   a. Knowledge about the kinds of forces or conditions which need to be dealt with in a group situation, e.g., interpersonal relations, motivation of members, processes of group development, recognition of the existence of informal leaders and informal groups, etc.

   b. Principles describing how each of these affects the situation and one another

   c. Skill in observing and recognizing these various forces and their quality as they occur in a particular group at a particular time, i.e., the leader as a diagnostician

   d. Skill in the application of behavioral principles to influence and control group behavior

4. Leadership styles:* The modes of interpersonal behavior over which leaders attempt to exert influence and control (Fiedler, p. 37)

   a. The performance of a group depends on both a leader's style of interacting with his group members and the nature of the group situation in which he and his group find themselves. (Fiedler, p. 36)

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* This topic will be treated in greater depth in Part Seven, Leadership Behavior and Styles.

b. A concept of leadership style consists of a continuum with extremely autocratic leadership at one end and laissez-faire leadership at the other.

c. Leaders tend to vary their behavior along the autocratic/laissez-faire continuum. The relative position a leader adopts is influenced by:

1) Forces (traits) of the leader, i.e., the leader's personality

2) Forces (perceptions) of the subordinates, i.e., the nature of the group

3) Forces of the situation in which the leader and group are involved

(Tannenbaum, Weschler, and Massarik, pp. 67-79; Hays and Thomas, p. 44; Lippitt, pp. 83-93)

B. Factors Affecting the Degree of Influence Which the Leader Has Over Group Behavior (Fiedler, pp. 22-30)

1. Leader's position power: Formally appointed or elected as opposed to emergent position. Degree of authority is defined by the position itself, the duty assignment as well as the responsibility assignment; e.g., military rank, duty, and responsibility are the authority that enables the leader to get his group members to comply with and accept his direction and leadership.

a. Factors which strengthen or mitigate the powers of the leader

1) A leader's position power determines the degree of positive reinforcement and punishment which he has at his disposal.

a) A leader with high position power will not necessarily get better performance from his group than a leader with low position power. Group performance depends on the leader's skill in using reinforcement.

b) Position power affects group performance indirectly and probably by virtue of its effect on the interpersonal relationship between leader and group members, i.e., exchange of reinforcers.

c) Potency of reinforcement or punishment is directly related to position power, e.g., praise from an Admiral generally means more to an Ensign than praise from a Captain.

(1) Disadvantages of potency of reinforcement or punishment as related to position power

(a) Satiation with extended use

(b) In some instances may require constant monitoring

(c) Changes behavior, not attitudes

b. Other factors which affect position power (Backman and Secord, pp. 203-209)

1) Position itself

a) Cause: Lifelong training of most people is towards conformity to authority, e.g., parents, teachers, policemen, officers

b) Advantages

(1) Doesn't require surveillance

(2) Doesn't satiate

2) Referent: How well the leader's subordinates identify with the leader will probably affect his position power

3) Expertise: The degree to which a leader is expert in performing a particular task may affect his power and his effectiveness in getting the group to perform the same task.

c. Importance of position power to the leader

1) Leader who has rank and position power may get group members to perform their tasks more readily than a leader who has little position power

a) A leader with high position power has a greater range of positive and negative reinforcers at his disposal.

b) A leader with low position power must rely mainly on verbal reinforcers, since his ability to shape responses of group members is dependent upon his personal relations with the individuals in his group.

c) The leader's consistency in applying positive and negative reinforcers will determine the behavior of the group; e.g., if a leader promises extra liberty upon completion of a task and doesn't deliver, the members will start distrusting the contingency.

2. Task structure: Task dimensions and characteristics which classify and describe established group tasks

    a. The degree to which the task is structured or unstructured affects the leader's influence over group members.

        1) Leader's influence on member behavior is greater in tasks which are highly structured.

            a) Organization sanctions, such as Navy regulations, can be imposed which strengthen the leader's position power.

            b) Specific instructions and regulations exist which make it easier for the leader to discriminate when to punish or reinforce.

        2) Leader's influence on member behavior tends to be weaker in tasks which are unstructured.

            a) Organization may not be able to provide direct support because of lack of specified procedures.

            b) Behaviors to accomplish the task are not clearly defined, which makes it difficult for the leader to determine exactly which responses to punish or reinforce.

            c) Because the leader has no more expert knowledge than his members, the task dilutes his influence.

3. Personal relationship between leader and group members: The interpersonal relationship which the leader establishes with his men

    a. The degree to which a leader is involved with his group members and looks after their needs affects his influence over them.

        1) Leader should learn about his group members, that is, learn what their reinforcers are; e.g., an individual might like to talk about his family; this is a reinforcer which can be used to advantage by the leader.

2) Leader should be sensitive to the fact that he may not correctly interpret the group members' needs, i.e., that their needs are the needs of the group and not necessarily the needs of the leader. (WLC)

3) The leader's relationship is the most important single element in determining the leader's influence in a group to the extent that they are not conforming; e.g., if they deny his power influence, then he loses all effective power.

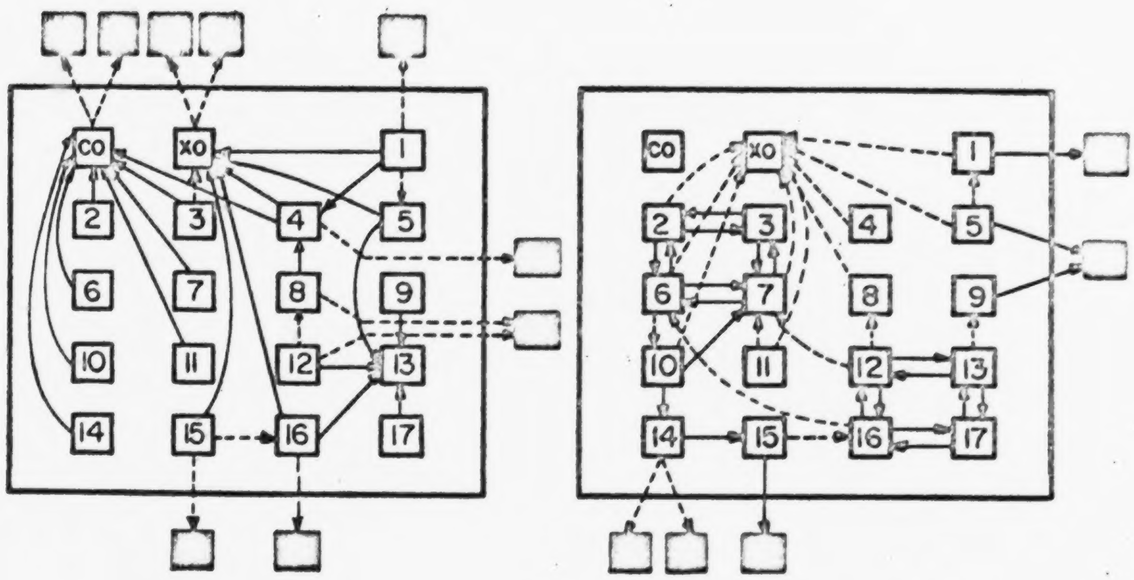
4) Rank or organizationally granted powers assume minor importance if the leader is one who is wholeheartedly accepted or who inspires complete and unquestioning loyalty in his followers. (Lippitt, p. 43; WLC)

C. Sociograms in Determining Leader-Member Relationships

1. Definition: Sociometry is an inclusive name for formal methods of analyzing the interpersonal structure of groups.

2. The degree to which the leader-member relationship is good or poor can be assessed by a sociometric preference rating method, for example:

   a. Description: Naval fliers in two flight squadrons were asked to choose the person they would like most as a flying partner and to reject anyone they would not want as a partner. The sociograms show their responses.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Squadron A

Squadron B

Sociograms of two flight squadrons. Diagram at left represents Squadron A; diagram at right, Squadron B. Squares outside boundary lines are individuals outside the respective squadrons. Dotted lines are negative choices; black lines are positive choices.

b. Results of Sociometric Study: The two leaders in Squadron A are very popular, while in Squadron B the Executive Officer received a large number of rejections and the Commanding Officer received no positive votes. There are no cliques in Squadron A, but in Squadron B individuals 2, 3, 6, and 7 form a subgroup within the squadron. So do members 12, 13, 16, and 17. (In any group effort, a faction, or clique, can function as a divisive force detracting from the group's overall efficiency.) In addition, all the positive choices in Squadron A are within the squadron, and most of the negative choices are outside the squadron. In Squadron B, on the other hand, several positive choices are individuals outside the group, and only a few positive choices, except for the two cliques, are individuals within the squadron.

c. Method to Improve Squadron B: As shown in the sociograms, the CO in Squadron B would be less effective then the CO in Squadron A, and the difficulty in Squadron B seems to center around the Executive Officer. Although the sociogram does not suggest any positive solution, it is a reasonable starting point toward any attempt to improve the situation.

d. Conclusion: A leader can only be as effective as his group will let him be. Success depends on how well the leader delivers the group members' reinforcers.

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Outline Reference	Terminal and Enabling Objectives	
A.2.	Given several choices, the M will be able to identify the paragraph which describes the relationship between leadership and group dynamics.	TO 1
A.1.	The M will be able to select from several choices the statement which best defines group dynamics.	EO-1
A.3.	The M will be able to select from several choices the statements which best describe what a leader's knowledge of group dynamics consists of.	EO-2
A.4.c.	Given a description of the performance of a group and its leader, the M will be able to select from several choices the specific factor(s) that affected group performance. (Based on the principle that group performance depends on leadership style and the nature of the group situation)	TO 2
A.4.	The M will be able to identify the statement which best defines leadership styles from several choices.	EO-1
A.4.	Given descriptions of military situations in which extreme leadership styles are exhibited by leaders, the M will be able to identify the extreme leadership style displayed in each situation.	EO-2

Outline Reference	Terminal and Enabling Objectives	
B.1.a.b.	Given a description of a leader's influence on a group, the M will be able to select the statement(s) which best describe(s) the nature of the influence according to one or more of the following: a. position power b. referent power c. expert power	TO 3
B.1.	The M will be able to identify from several choices a leader's position power.	EO-1
B.1.	Given situations in which the group members are following the direction of the leader, the M will select the example that reflects both compliance and acceptance of the leader's direction as opposed to mere compliance.	EO-2
B.2.	The M will be able to evaluate a description of a task structure, and on the basis of this evaluation, will be able to select from several choices the statement which best describes the degree of influence the leader is likely to have over group behavior. (Based on his knowledge of group behavior in highly structured and unstructured tasks)	TO 4
B.2.a.	The M will select from several choices the statement that describes the positive result of a highly structured task.	EO-1

Outline Reference	Terminal and Enabling Objectives	
B.2.a.	The M will be able to evaluate a description of a task and select from several choices the statement that identifies it as an unstructured task.	TO 4 EO-2
B.3.	Given a description of the personal relationship between a leader and his group members, the M will select the principle that the leader is using to increase his influence.	EO-3
C.	Given a sociogram, depicting interactions within a group, the M will be able to select from several choices the statements which best describe the interactions within that group.	TO 5
C.	Given a sociogram depicting interactions within a group, the M will be able to evaluate the sociogram and select from several choices the statements which best describe the performance that the group might exhibit during a mission.	TO 6
C.	Given several sociograms depicting group interactions, the M will select the appropriate paragraph describing each of the sociograms.	EO-1

APPENDIX P.

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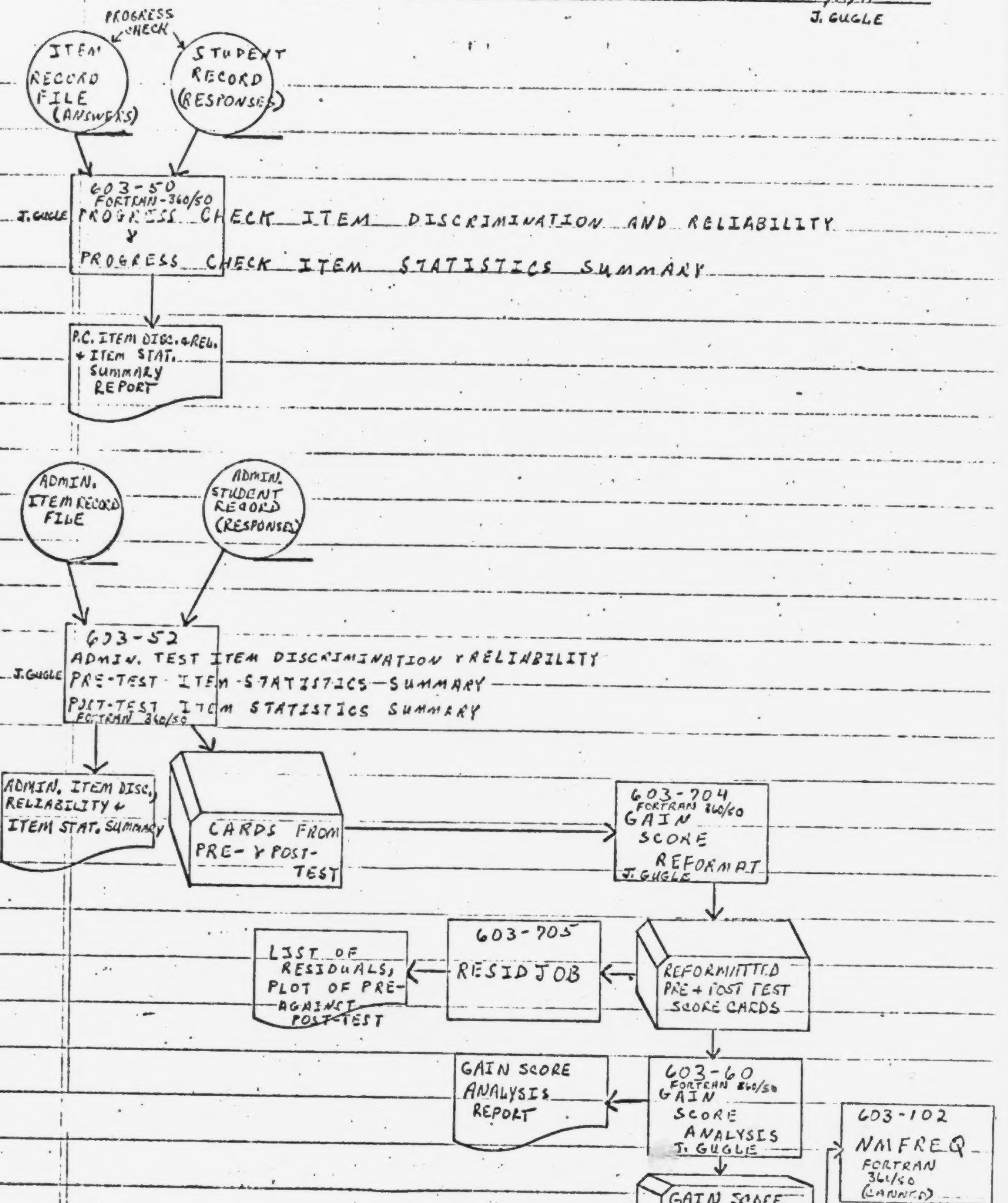
APPENDIX Q.

SYSTEMS FLOW CHARTS FOR PROJECT DATA ANALYSIS

1 of 2

PROJECT ANNAPOLIS RESEARCH PROCESSING FLOW 1/19/71

J. GUGLE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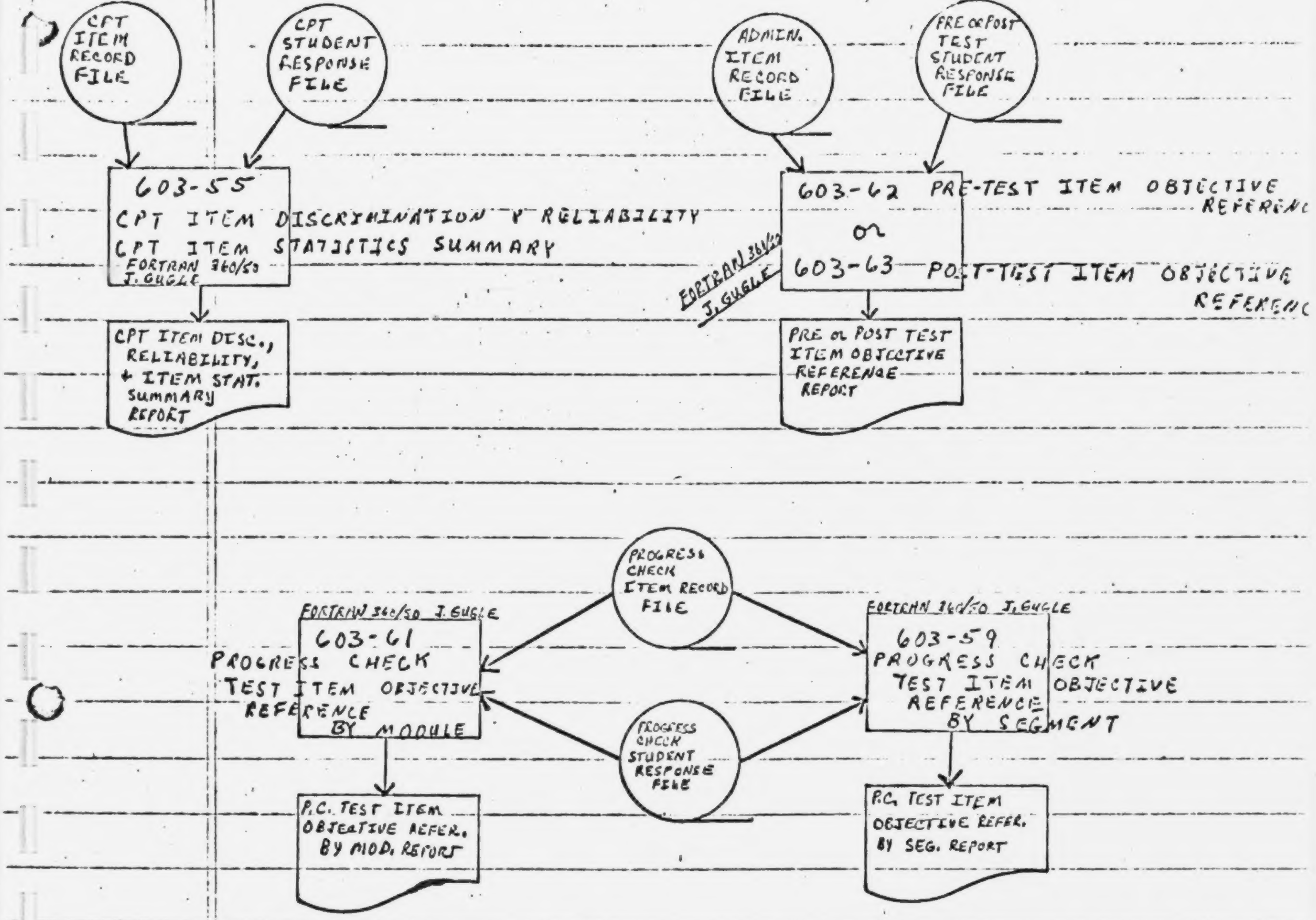
ITEM RECORD FILE (ANSWERS)
STUDENT RECORD (RESPONSES)
603-50 FORTRAN-360/50
J. GUGLE
PROGRESS CHECK ITEM DISCRIMINATION AND RELIABILITY & PROGRESS CHECK ITEM STATISTICS SUMMARY
P.C. ITEM DISC. & REL. + ITEM STAT. SUMMARY REPORT
ADMIN. ITEM RECORD FILE
ADMIN. STUDENT RECORD (RESPONSES)
603-52
ADMIN. TEST ITEM DISCRIMINATION & RELIABILITY
J. GUGLE
PRE-TEST ITEM STATISTICS SUMMARY
POST-TEST ITEM STATISTICS SUMMARY
FORTRAN 360/50
ADMIN. ITEM DISC, RELIABILITY & ITEM STAT. SUMMARY
CARDS FROM PRE- & POST-TEST
603-704 FORTRAN 360/50
GAIN SCORE REFORMAT
J. GUGLE
603-705
RESID JOB
LIST OF RESIDUALS, PLOT OF PRE- AGAINST POST-TEST
REFORMATTED PRE + POST TEST SCORE CARDS
603-60 FORTRAN 360/50
GAIN SCORE ANALYSIS
J. GUGLE
GAIN SCORE ANALYSIS REPORT
GAIN SCORE ANALYSIS CARDS
603-102
NMFREQ
FORTRAN 360/50 (CANNED)
GAIN SCORE SUMMARY ANALYSIS REPORT


CPT ITEM RECORD FILE
CPT STUDENT RESPONSE FILE
603-55
CPT ITEM DISCRIMINATION & RELIABILITY
CPT ITEM STATISTICS SUMMARY
FORTRAN 360/50 J. GUGLE
CPT ITEM DISC., RELIABILITY, + ITEM STAT. SUMMARY REPORT
ADMIN. ITEM RECORD FILE
PRE OR POST TEST STUDENT RESPONSE FILE
603-62 PRE-TEST ITEM OBJECTIVE REFERENC
or
603-63 POST-TEST ITEM OBJECTIVE REFERENC
FORTRAN 360/50 J. GUGLE
PRE OR POST TEST ITEM OBJECTIVE REFERENCE REPORT
PROGRESS CHECK ITEM RECORD FILE
PROGRESS CHECK STUDENT RESPONSE FILE
FORTRAN 360/50 J. GUGLE
603-61
PROGRESS CHECK TEST ITEM OBJECTIVE REFERENCE BY MODULE
P.C. TEST ITEM OBJECTIVE REFER. BY MOD. REPORT
FORTRAN 360/50 J. GUGLE
603-59
PROGRESS CHECK TEST ITEM OBJECTIVE REFERENCE BY SEGMENT
P.C. TEST ITEM OBJECTIVE REFER. BY SEG. REPORT

SYSTEM FLOW PROJECT ANNAPOLIS 2/17/71 B. Wilcox

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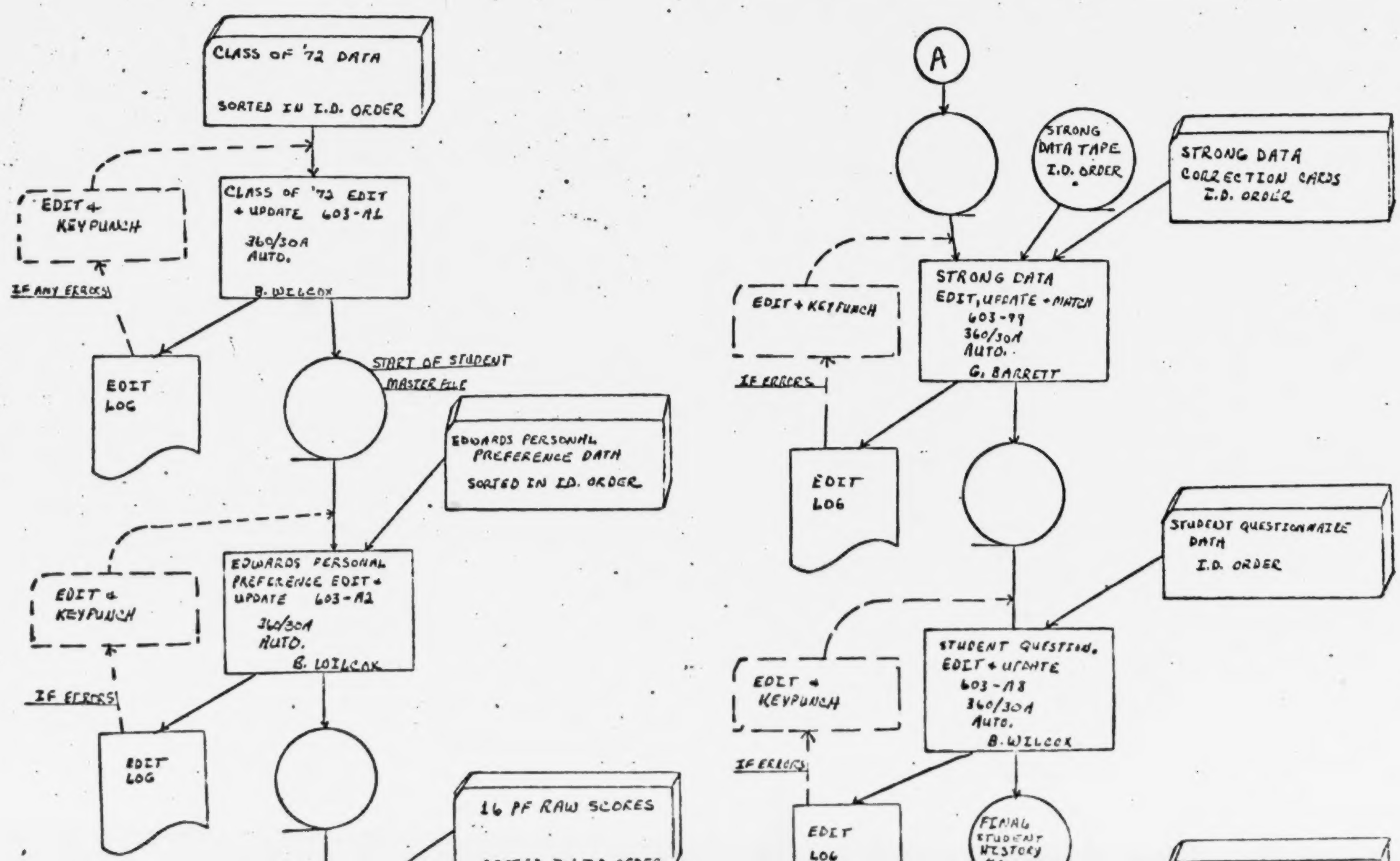
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EDIT + KEYPUNCH
IF ANY ERRORS
EDIT LOG
START OF STUDENT MASTER FILE
EDWARDS PERSONAL PREFERENCE DATA
SORTED IN I.D. ORDER
EDWARDS PERSONAL PREFERENCE EDIT + UPDATE 603-A2
360/30A
AUTO.
B. WILCOX
EDIT + KEYPUNCH
IF ERRORS
EDIT LOG
16 PF RAW SCORES
A
STRONG DATA TAPE
I.D. ORDER
STRONG DATA CORRECTION CARDS
I.D. ORDER
STRONG DATA EDIT, UPDATE + MATCH
603-A9
360/30A
AUTO.
G. BARRETT
EDIT + KEYPUNCH
IF ERRORS
EDIT LOG
STUDENT QUESTIONNAIRE DATA
I.D. ORDER
STUDENT QUESTION. EDIT + UPDATE
603-A8
360/30A
AUTO.
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EDIT + KEYPUNCH
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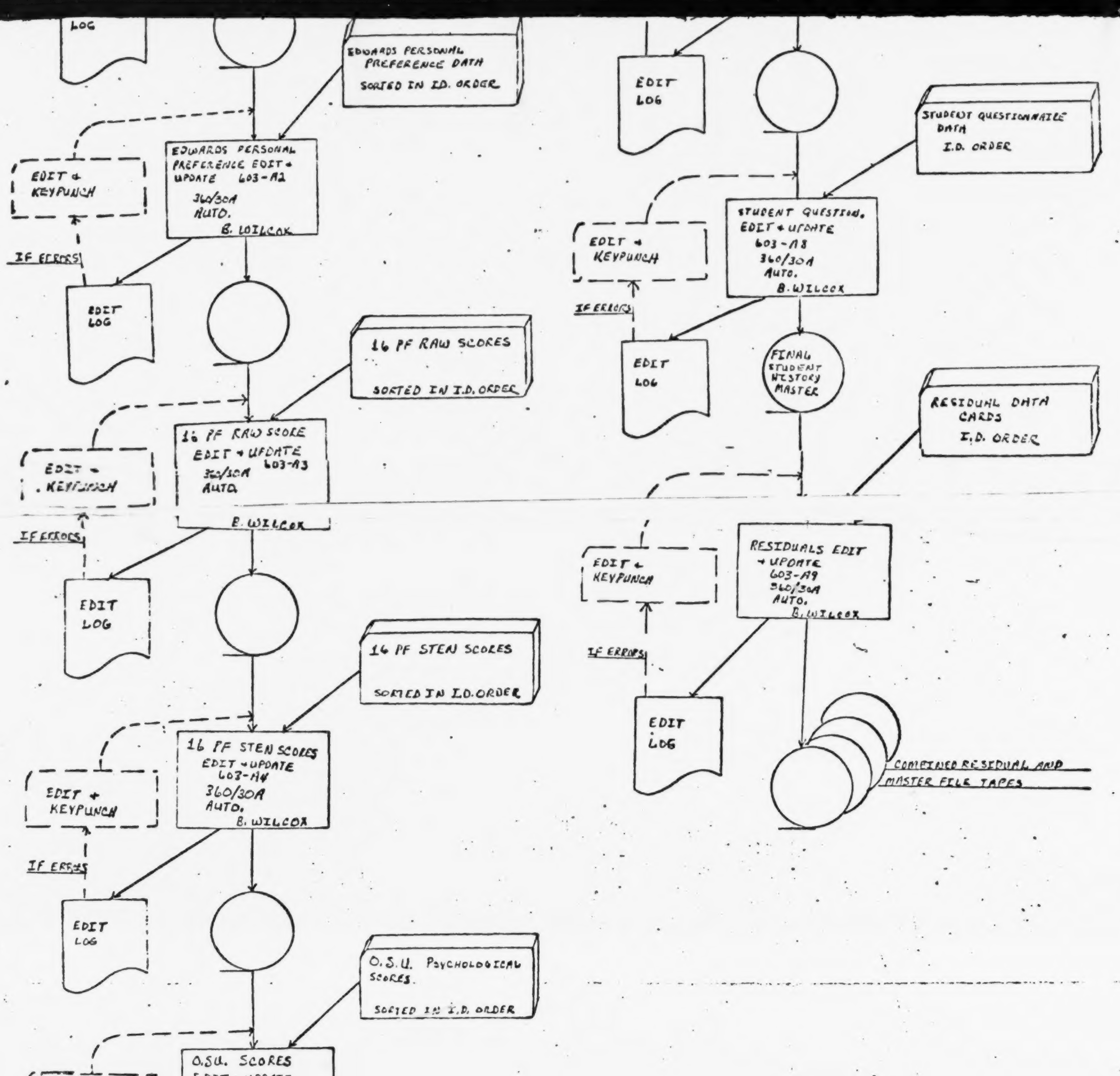
FINAL STUDENT HISTORY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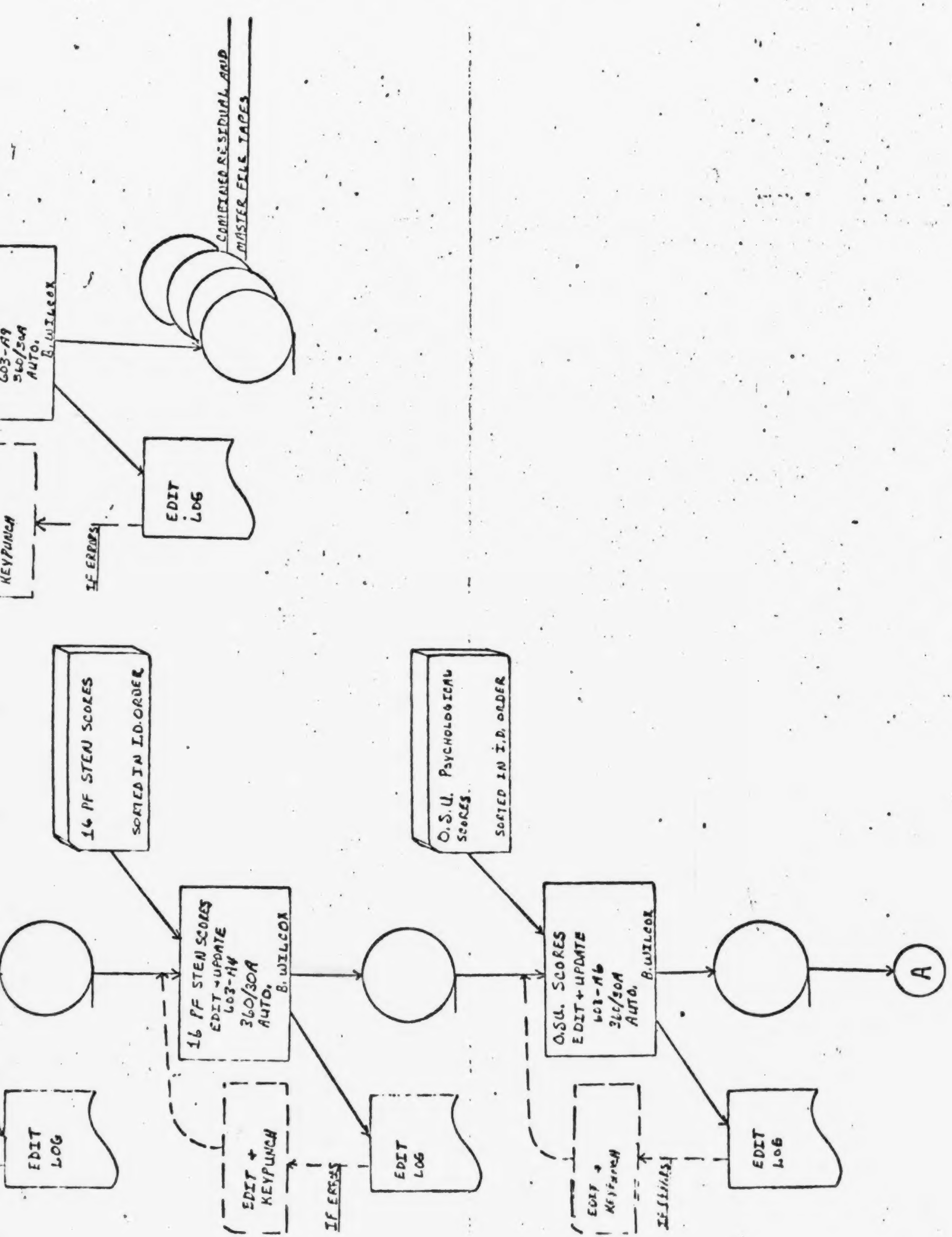
B. WILCOX
EDIT + KEYPUNCH
IF ERRORS
EDIT LOG
16 PF RAW SCORES
SORTED IN I.D. ORDER
16 PF RAW SCORE EDIT + UPDATE 603-A3
360/30A
AUTO.
B. WILCOX
EDIT + KEYPUNCH
IF ERRORS
EDIT LOG
16 PF STEN SCORES
SORTED IN I.D. ORDER
16 PF STEN SCORES EDIT + UPDATE 603-A4
360/30A
AUTO.
B. WILCOX
EDIT + KEYPUNCH
IF ERRORS
EDIT LOG
O.S.U. PSYCHOLOGICAL SCORES.
SORTED IN I.D. ORDER
O.SU. SCORES
EDIT LOG
STUDENT QUESTIONNAIRE DATA
I.D. ORDER
STUDENT QUESTION. EDIT + UPDATE 603-A8
360/30A
AUTO.
B. WILCOX
EDIT + KEYPUNCH
IF ERRORS
EDIT LOG
FINAL STUDENT HISTORY MASTER
RESIDUAL DATA CARDS
I.D. ORDER
RESIDUALS EDIT + UPDATE 603-A9
360/30A
AUTO.
B. WILCOX
EDIT + KEYPUNCH
IF ERRORS
EDIT LOG
COMBINED RESIDUAL AND MASTER FILE TAPES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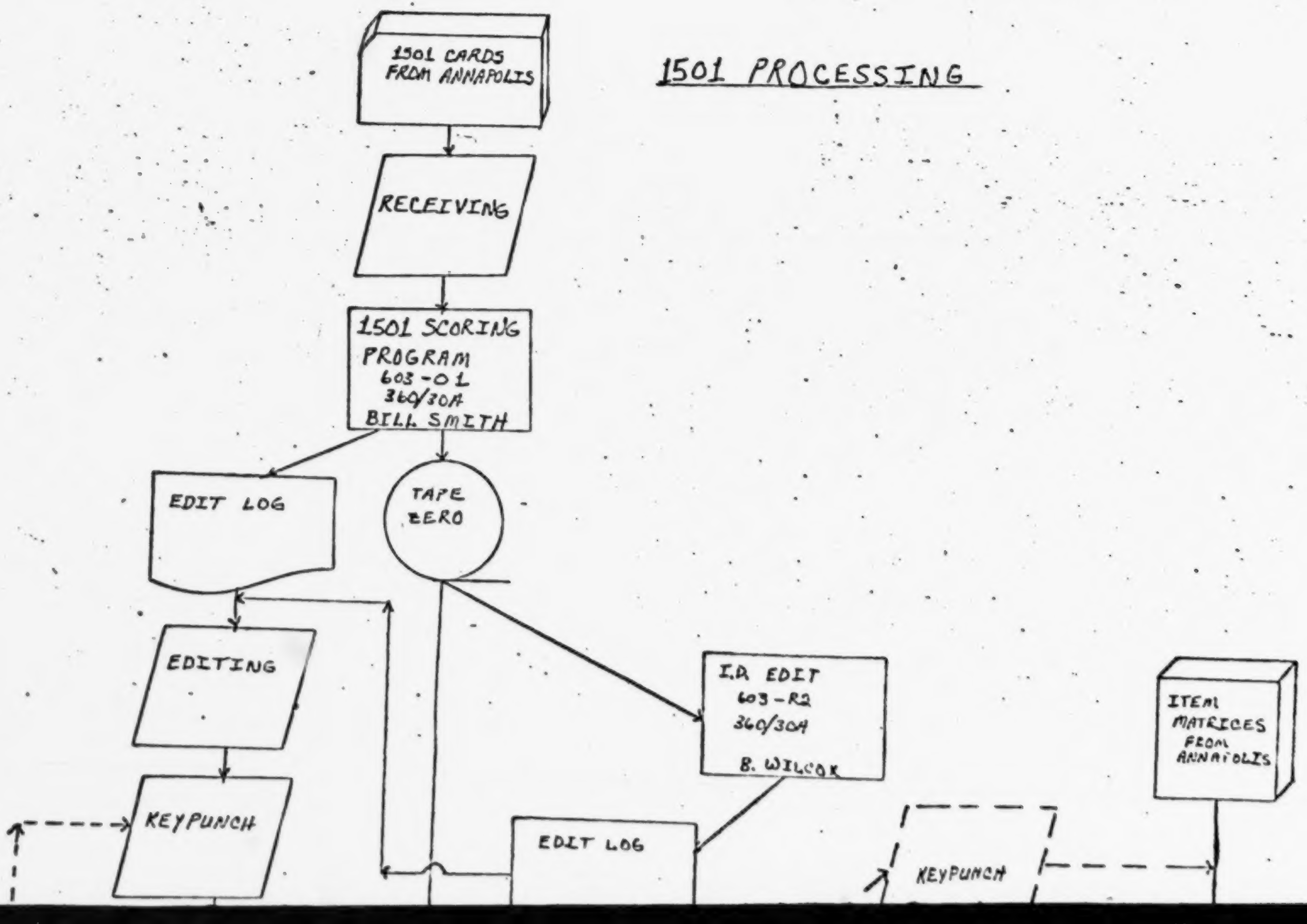
360/30A
AUTO.
B. WILCOX
COMBINED RESIDUAL AND
MASTER FILE TAPES
EDIT LOG
KEYPUNCH
IF ERRORS
16 PF STEN SCORES
SORTED IN I.D. ORDER
16 PF STEN SCORES
EDIT + UPDATE
603-A4
360/30A
AUTO.
B. WILCOX
EDIT LOG
EDIT + KEYPUNCH
IF ERRORS
O.S.U. PSYCHOLOGICAL SCORES.
SORTED IN I.D. ORDER
O.S.U. SCORES
EDIT + UPDATE
603-A6
360/30A
AUTO.
B. WILCOX
EDIT LOG
EDIT + KEYPUNCH
IF ERRORS
A
EDIT LOG

SYSTEM FLOW PROJECT ANNAPOLIS 3/12/70 F. WILCC

1501 PROCESSING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RECEIVING
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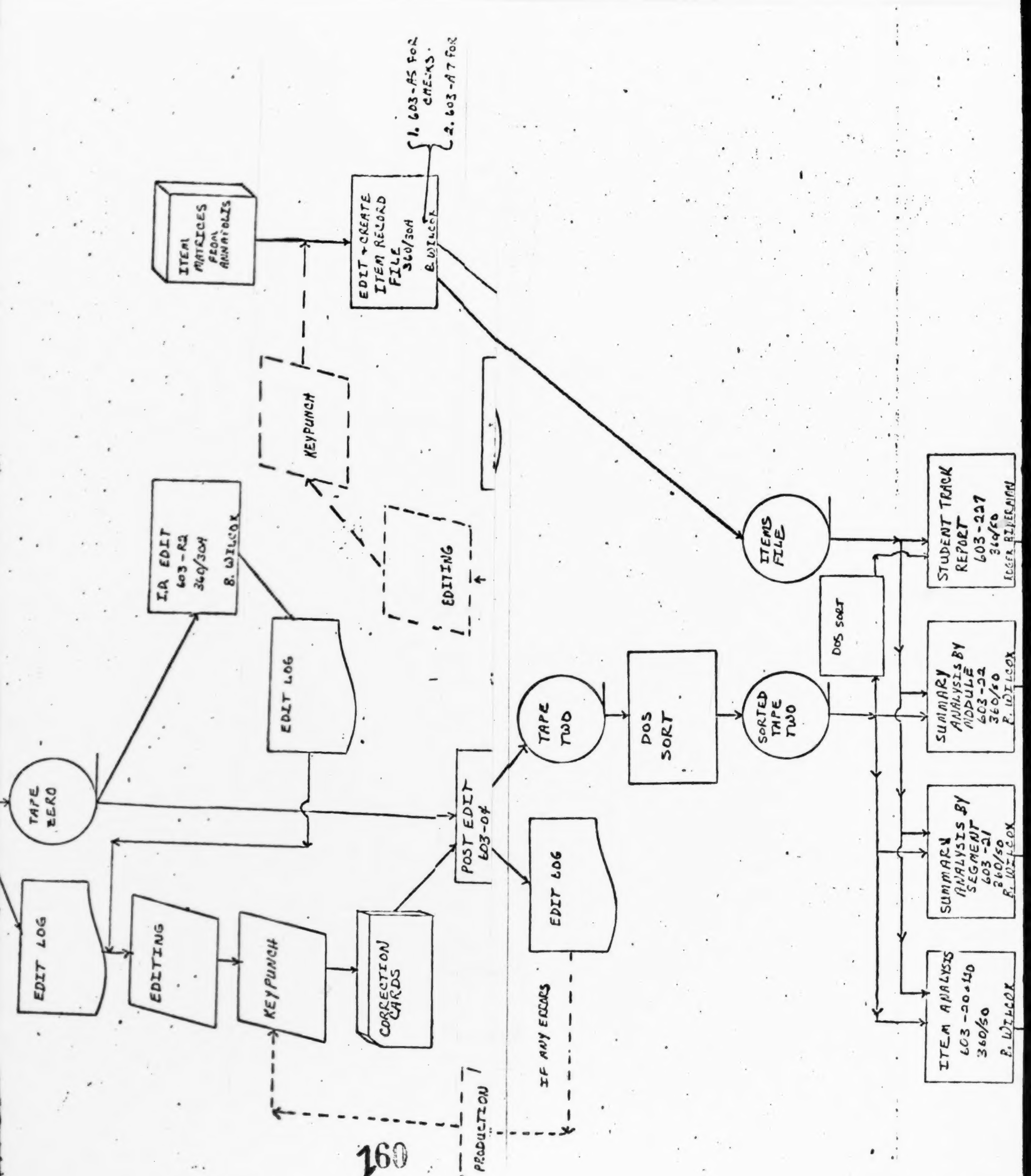
KEYPUNCH
I.D. EDIT 603-R2 360/30A B. WILCOX
EDIT LOG
KEYPUNCH
ITEM MATRICES FROM ANNAPOLIS

EDIT LOG
TAPE ZERO
I.A EDIT
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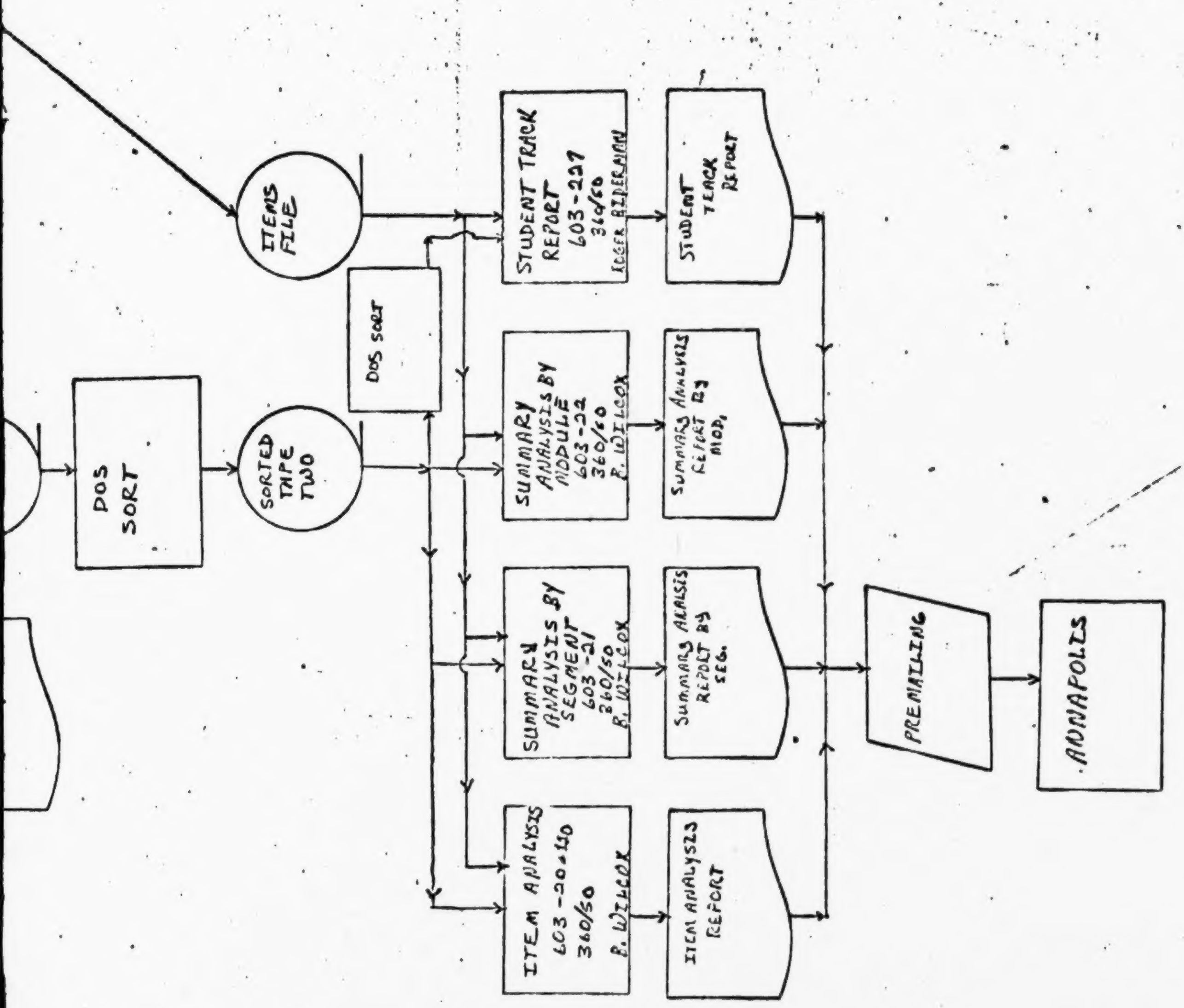
360/30A
B. WILCOX
EDIT LOG
ITEM MATRICES FROM ANNAPOLIS
KEYPUNCH
EDITING
EDIT + CREATE ITEM RECORD FILE
360/30A
B. WILCOX
1. 603-A5 FOR CHECKS.
2. 603-A7 FOR
EDITING
KEYPUNCH
CORRECTION CARDS
POST EDIT
603-04
EDIT LOG
IF ANY ERRORS
PRODUCTION
TAPE TWO
DOS SORT
SORTED TAPE TWO
ITEMS FILE
DOS SORT
ITEM ANALYSIS
603-20 + 140
360/50
B. WILCOX
SUMMARY ANALYSIS BY SEGMENT
603-21
360/50
B. WILCOX
SUMMARY ANALYSIS BY MODULE
603-22
360/50
B. WILCOX
STUDENT TRACK REPORT
603-227
360/50
ROGER BIBERMAN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DOS SORT
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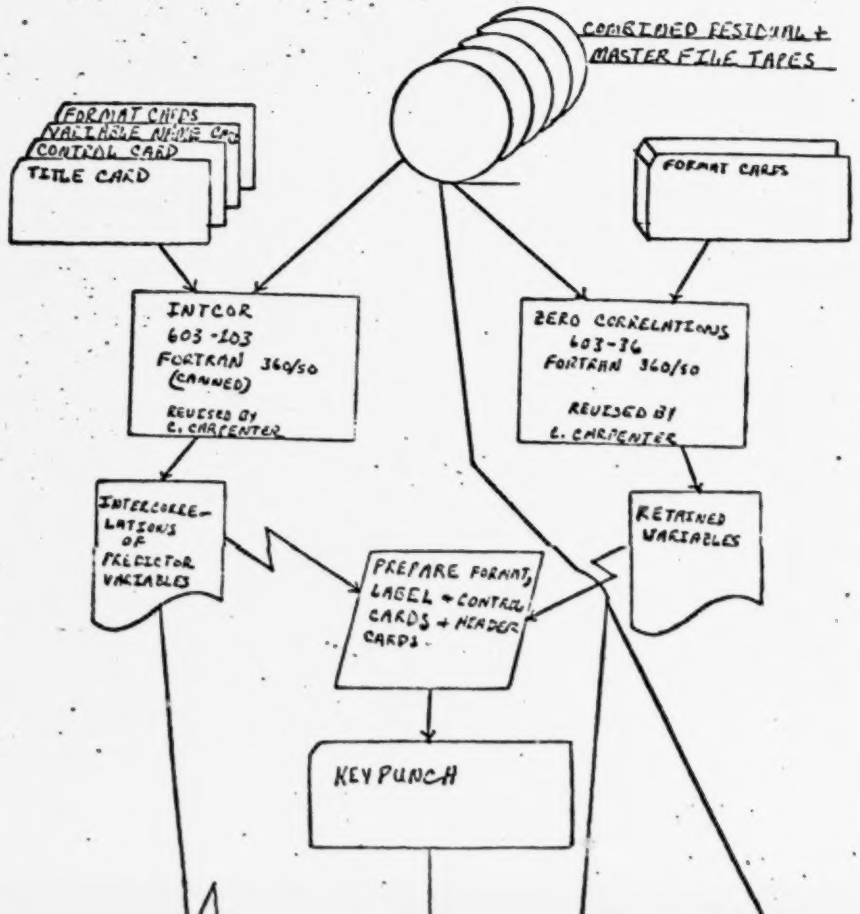
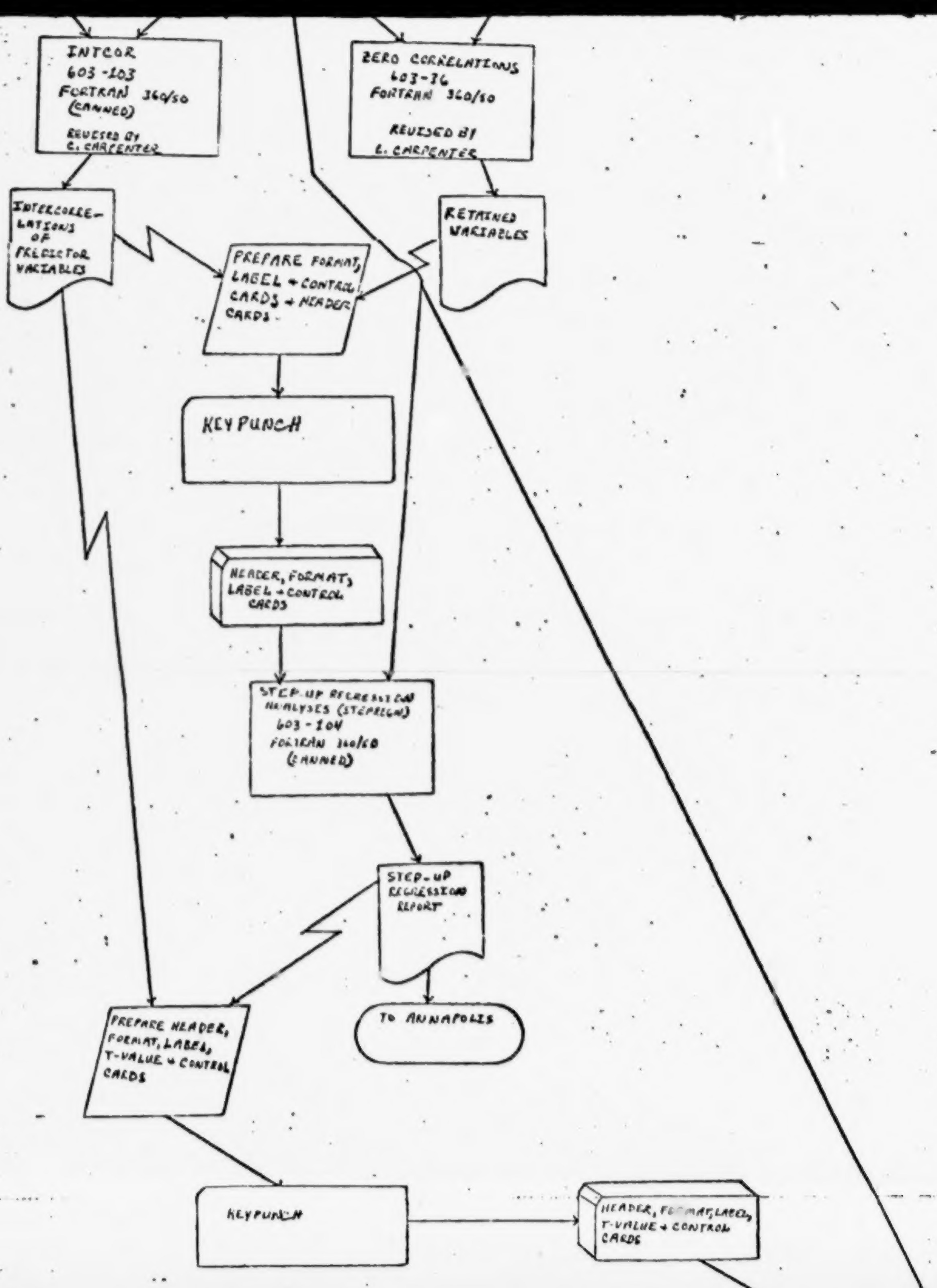
SUMMARY ANALYSIS REPORT BY MOD.
SUMMARY ANALYSIS BY SEGMENT 603-21 360/50 B. WILCOX
SUMMARY ANALYSIS REPORT BY SEG.
ITEM ANALYSIS 603-20+120 360/50 B. WILCOX
ITEM ANALYSIS REPORT
PREMAILING
ANNAPOLIS

SYSTEM FLOW PROJECT ANNAPOLIS 2/18/71 B. WILCOX

RESIDUAL PROCESSING


COMBINED RESIDUAL + MASTER FILE TAPES
FORMAT CARDS
VARIABLE NAME CARDS
CONTROL CARD
TITLE CARD
FORMAT CARDS
INTCOR
603-103
FORTRAN 360/50
(CANNED)
REVISED BY
C. CARPENTER
ZERO CORRELATIONS
603-36
FORTRAN 360/50
REVISED BY
C. CARPENTER
INTERCORRELATIONS OF PREDICTOR VARIABLES
RETAINED VARIABLES
PREPARE FORMAT, LABEL + CONTROL CARDS + HEADER CARDS
KEYPUNCH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FORTRAN 360/50
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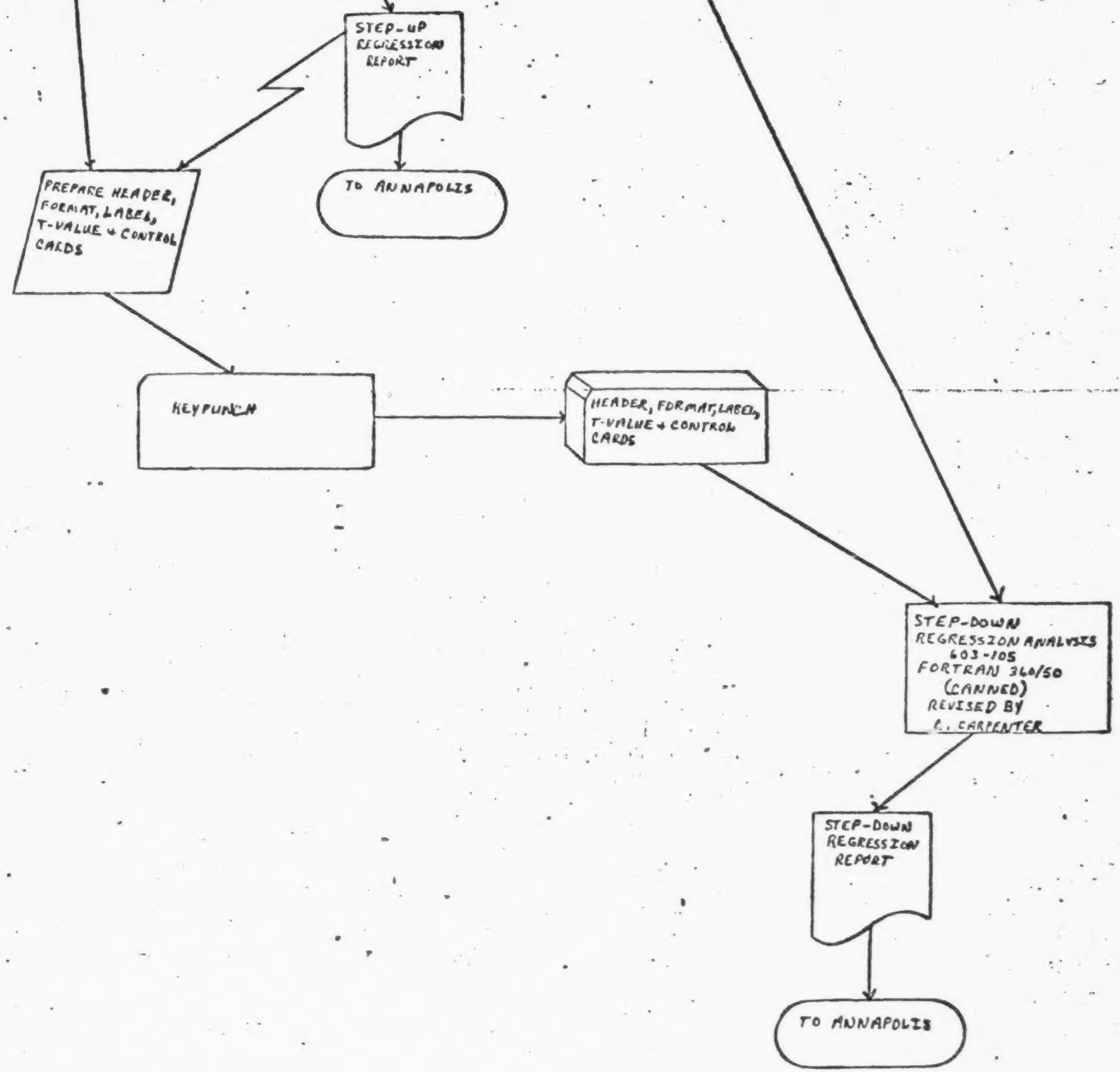
REVISED BY
C. CARPENTER
ZERO CORRELATIONS
603-36
FORTRAN 360/50
REVISED BY
C. CARPENTER
INTERCORRELATIONS OF PREDICTOR VARIABLES
RETAINED VARIABLES
PREPARE FORMAT, LABEL + CONTROL CARDS + HEADER CARDS
KEYPUNCH
HEADER, FORMAT, LABEL + CONTROL CARDS
STEP-UP REGRESSION ANALYSES (STEPREGN)
603-104
FORTRAN 360/50
(CANNED)
STEP-UP REGRESSION REPORT
TO ANNAPOLIS
PREPARE HEADER, FORMAT, LABEL, T-VALUE + CONTROL CARDS
KEYPUNCH
HEADER, FORMAT, LABEL, T-VALUE + CONTROL CARDS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KEYPUNCH
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STEP-DOWN REGRESSION ANALYSIS 603-105 FORTRAN 360/50 (CANNED) REVISED BY C. CARPENTER
STEP-DOWN REGRESSION REPORT
TO ANNAPOLIS

APPENDIX R

REVISION WORKSHEETS, INPUT DATA FORMS FOR REVISION, AND ANCILLARY MATERIALS

SYNDACTIC TEXT FRAME ANALYSIS DATA

NO. M'n Taking this version 13

PART 2 SEGMENT 6

☐ Single volume

☒ 4-Volume

SUMMARY PRE-QUIZ 1	
1	2
2	5
3	7
4	3
5	4
6	/

PROGRAMMED SEQUENCE 1
Taken by 6 M'n.

1	0	11	3	21	5	31		41		51	
2	2	12	6	22	0	32		42		52	
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4	1	14	0	24		34		44			
5	0	15	0	25		35		45			
6	0	16	3	26		36		46			
7	2	17	0	27		37		47			
8	0	18	4	28		38		48			
9	5	19	0	29		39		49			
10	0	20	0	30		40		50			

SUMMARY POST-QUIZ 1	
3	0
5	0
4	1
2	1
1	0
	/

SUMMARY PRE-QUIZ 2	
1	4
2	0
3	0
4	2
5	3
6	/

PROGRAMMED SEQUENCE 2
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8	2	18		28		38			
9	2	19		29		39			
10	2	20		30		40			

SUMMARY POST-QUIZ 2	
3	2
1	0
5	0
4	0
2	0
	/

SUMMARY PRE-QUIZ 3	
1	11
2	3
3	5
4	6
5	2
6	/

PROGRAMMED SEQUENCE 3
Taken by 9 M'n.

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7	3	17	1	27	0	37		47	
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9	0	19	3	29	1	39		49	
10	0	20	0	30	6	40		50	

SUMMARY POST-QUIZ 3	
2	3
4	1
5	1
1	0
3	0
	/

SUMMARY PREQUIZ 4	
1	8
2	6
3	7
4	8
5	1
6	1

PROGRAMMED SEQUENCE 4
Taken by 8 M'n.

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5	1	15	0	25		35		45		55	
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7	0	17	1	27		37		47			
8	2	18	2	28		38		48			
9	0	19	0	29		39		49			
10	1	20	0	30		40		50			

SUMMARY POST-QUIZ 4	
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4	5
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1	2
6	0
5	0

SUMMARY PREQUIZ 5	
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2	
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4	
5	
6	

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8		18			
9		19			
10		20			

SUMM POST-Q

```
                                   TEST ITEM OBJECTIVE REFERENCE (ADMINISTRATIVE PRETEST )

  TEST    OBJECTIVE  PRETEST   PRETEST   NO. CORRECT  PER CENT     TEST    OBJECTIVE  PRETEST   PRETEST   NO. CORRECT  PER CENT
ITEM ID      ID     ITEM NO.   ITEM ID    RESPONSES   CORRECT    ITEM ID      ID     ITEM NO.   ITEM ID    RESPONSES   CORRECT

3000104   1000102       1     3200101        25        56.82     3004115   2034105      43     3204143         6        13.64
3000516   1000506       2     3200502         3         6.82     3000317   2030302      44     3200344        20        45.45
3001315   1001304       3     3201303        22        50.00     3005207   2025203      45     3205245        37        84.09
3001324   2031803       4     3201804         3         6.82     3001509   2051501      46     3201546        16        36.36
3003517   1003508       5     3203505        39        68.18     3003205   1003201      47     3203247        13        29.55
3001615   1001604       6     3201606        26        59.09     3004614   1004607      48     3204648        26        59.09
3005409   2025401       7     3205407        10        22.73     3003805   2023801      49     3203849        39        88.64
3003313   2063306       8     3203308         9        20.45     3000503   1000502      50     3200550        30        68.18
3001109   1001102      10     3201110        19        43.18     3001706   2011705      51     3201751        24        54.55
3004913   1004905      11     3204911        40        90.91     3003710   2053703      52     3203752        31        70.45
3000217   1000209      12     3200212        10        22.73     3002312   2032301      54     3202354         9        20.45
3005617   2045602      13     3205613        25        56.82     3003112   2023103      55     3203155        14        31.82
3002519   2042503      14     3202514        23        52.27     3003912   1003902      56     3203956        20        45.45
3004323   2074001      15     3204015        25        56.82     3005512   2035502      57     3205557        13        29.55
3001418   2061401      16     3201416        32        72.73     3004821   2084803      58     3204858        36        81.82
3002614   2052601      17     3202617         6        13.64     3004210   2034203      59     3204259        27        61.36
3005818   2035801      18     3205818        38        86.36     3002716   2042702      60     3202760        16        36.36
3002021   2062001      19     3202019        16        36.36     3001813   2021801      61     3201861        36        81.82
3002824   2102802      20     3202820        27        61.36     3004410   2034403      62     3204462        10        22.73
3000613   2020602      21     3200621        38        86.36     3000206   1000203      63     3200263        27        61.36
3004322   2064302      22     3204322        39        88.64     3002805   1002802      64     3202864        34        77.27
3005912   1005906      23     3205923        40        90.91     3005118   2075101      65     3205165        43        97.73
3002916   2072902      24     3202924         9        20.45     3000912   1000903      66     3200966        31        70.45
3000918   2040901      25     3200925        20        45.45     3003424   2063402      67     3203467        31        70.45
3002205   2012201      26     3202226         3         6.82     3001411   2041404      68     3201468         7        15.91
3000425   2060404      27     3200427        19        43.18     3005713   2025701      69     3205769        28        63.64
3000818   1000802      28     3200828        39        88.64     3004511   2064505      70     3204570        22        50.00
3003019   2053002      29     3203029        10        22.73     3000407   1000402      71     3200471        10        22.73
3004721   1004705      31     3204731        31        70.45     3002110   2032103      72     3202172        31        70.45
3003221   2053207      32     3203232        13        29.55     3005401   1005401      73     3205473        36        81.82
3003922   2043902      34     3203934        22        50.00     3000122   1000111      74     3200174        27        61.36
3005308   2015304      35     3205335        20        45.45     3001919   2041903      75     3201975        20        45.45
3004219   2074202      36     3204236        29        65.91     3001008   1001003      76     3201076        38        86.36
3003724   2133701      37     3203737        17        38.64     3003503   1003502      77     3203577        42        95.45
3004522   2124503      38     3204538        36        81.82     3005007   1005004      78     3205078        40        90.91
3002313   2042302      39     3202339        20        45.45     3001210   1001203      79     3201279        14        31.82
3005922   2035902      41     3205941        38        86.36     3003010   2033003      80     3203080        15        34.09
3001313   2031301      42     3201342        17        38.64
```

TEST ITEM OBJECTIVE REFERENCE--PROGRESS CHECK

PART- 1, SEGMENT- 2

EO NO. TO NO.	OBJECTIVE IDENTIFIER	TEST ITEM IDENTIFIER	--- ITERATION 1 ---- NO. CORRECT RESPONSES	PERCENT CORRECT	ITERATION 2 NO. CORRECT RESPONSES	TOTAL NO. CORRECT	TOTAL PC CORRECT
TO-01	1000201	3400201	41	93.2	2	43	97.7
TO-02	1000202	3400202	25	56.8	11	36	81.8
EO-01 TO-04	2040201 1000204	3400203	41	93.2	3	44	100.0
TO-05	1000205	3400204	39	88.6	5	44	100.0
EO-01 TO-06	2060201 1000206	3400205	6	13.6	26	32	72.7
EO-01 TO-08	2080201 1000208	3400206	10	22.7	18	28	63.6
TO-11	1000211	3400208	35	79.5	9	44	100.0
EO-01 TO-12	2120201 1000212	3400209	34	77.3	8	42	95.5
TO-13	1000213	3400210	32	72.7	7	39	88.6
			N1 = 44		N2 = 37		

```
                         STUDENT TRACK REPORT

NIXON L R     STUDENT ID-716398    RESEARCH ID- 5              ITERATION 1    ITERATION 2
          PART     SEGMENT   MODULE      NO. ITEMS              RS    PC       RS    PC
           1          1         1           10                   8   80.0       0    0.0
           1          2         1            9                   3   33.3       8   88.9
                             **********     19      PART TOTALS 11              8
           2          1         1           10                   9   90.0       0    0.0
           2          2         1           10                   7   70.0       6   60.0
           2          3         1           10                   5   50.0       6   60.0
           2          4         1           10                   8   80.0       0    0.0
           2          5         1           10                   5   50.0       9   90.0
           2          6         1           10                   8   80.0       0    0.0
           2          7         1           10                   9   90.0       0    0.0
           2          8         1           10                  10  100.0       0    0.0
           2          9         1           10                   4   40.0      10  100.0
                             **********     90      PART TOTALS 65             31
           3          1         2           10                   8   80.0       0    0.0
           3          2         2            7                   5   71.4       0    0.0
           3          3         2           10                   9   90.0       0    0.0
           3          4         2           10                   9   90.0       0    0.0
           3          5         1           10                   8   80.0       0    0.0
```

```
                                    ITEM DISCRIMINATION AND RELIABILITY ANALYSIS

                                                        ADMINISTRATIVE POSTTEST

                                                                  ITEM  1

             ------FREQUENCIES------   CUMULATIVE FREQUENCIES-                ------FREQUENCIES------   CUMULATIVE FREQUENCIES-
 TOTAL SCORE CORRECT INCORRECT TOTAL   CORRECT INCORRECT TOTAL   TOTAL SCORE  CORRECT INCORRECT TOTAL   CORRECT INCORRECT TOTAL

     75        0        0        0       29       15       44        37         0        0        0        0        0        0
     74        0        0        0       29       15       44        36         0        0        0        0        0        0
     73        0        0        0       29       15       44        35         0        0        0        0        0        0
     72        0        0        0       29       15       44        34         0        0        0        0        0        0
     71        0        0        0       29       15       44        33         0        0        0        0        0        0
     70        0        0        0       29       15       44        32         0        0        0        0        0        0
     69        0        0        0       29       15       44        31         0        0        0        0        0        0
     68        0        0        0       29       15       44        30         0        0        0        0        0        0
     67        0        0        0       29       15       44        29         0        0        0        0        0        0
     66        0        0        0       29       15       44        28         0        0        0        0        0        0
     65        0        0        0       29       15       44        27         0        0        0        0        0        0
     64        1        0        1       29       15       44        26         0        0        0        0        0        0
     63        1        0        1       28       15       43        25         0        0        0        0        0        0
     62        0        0        0       27       15       42        24         0        0        0        0        0        0
     61        1        0        1       27       15       42        23         0        0        0        0        0        0
     60        1        2        3       26       15       41        22         0        0        0        0        0        0
     59        3        3        6       25       13       38        21         0        0        0        0        0        0
     58        5        0        5       22       10       32        20         0        0        0        0        0        0
     57        0        2        2       17       10       27        19         0        0        0        0        0        0
     56        1        2        3       17        8       25        18         0        0        0        0        0        0
     55        6        2        8       16        6       22        17         0        0        0        0        0        0
     54        2        2        4       10        4       14        16         0        0        0        0        0        0
     53        2        0        2        8        2       10        15         0        0        0        0        0        0
     52        1        1        2        6        2        8        14         0        0        0        0        0        0
     51        1        0        1        5        1        6        13         0        0        0        0        0        0
     50        0        0        0        4        1        5        12         0        0        0        0        0        0
     49        0        0        0        4        1        5        11         0        0        0        0        0        0
     48        2        1        3        4        1        5        10         0        0        0        0        0        0
     47        1        0        1        2        0        2         9         0        0        0        0        0        0
     46        1        0        1        1        0        1         8         0        0        0        0        0        0
     45        0        0        0        0        0        0         7         0        0        0        0        0        0
     44        0        0        0        0        0        0         6         0        0        0        0        0        0
     43        0        0        0        0        0        0         5         0        0        0        0        0        0
     42        0        0        0        0        0        0         4         0        0        0        0        0        0
     41        0        0        0        0        0        0         3         0        0        0        0        0        0
     40        0        0        0        0        0        0         2         0        0        0        0        0        0
     39        0        0        0        0        0        0         1         0        0        0        0        0        0
     38        0        0        0        0        0        0         0         0        0        0        0        0        0

                                                  VARIANCE  STANDARD ERROR    CORRECTION        TEST
           DIFFICULTY  P    Q   P-Q  P(MAX)  INDEX R  OF P-Q      OF P-Q     FOR CONTINUITY  STATISTIC  N1  NO

             0.659    178  225  -47   428    -0.11  6449.586     80.309         2.867          0.550    29  15
```

TEST ITEM STATISTICS SUMMARY (POSTTEST)

TEST ITEM ID	POSTTEST ITEM ID	ITEM DIFFICULTY	ITEM DISCRIMINATION	SIGNIFICANCE	TEST ITEM ID	POSTTEST ITEM ID	ITEM DIFFICULTY	ITEM DISCRIMINATION	SIGNIFICANC
3003010	3303028	0.614	0.25	1.344	3005922	3305970	0.955	-0.32	0.68
3001210	3301246	0.773	0.07	0.296	3002319	3302318	0.591	0.36	1.92
3005007	3305014	0.932	0.16	0.382	3004522	3304552	0.864	0.07	0.24
3003503	3303519	1.000	** -1.00	0.0	3003726	3303709	0.932	0.57	1.57
3001008	3301053	0.977	0.81	1.280	3004219	3304277	0.864	0.49	1.87
3001919	3301954	0.545	0.10	0.506	3005308	3305320	0.909	-0.03	0.02
3000122	3300133	0.500	0.03	0.141	3003922	3303957	0.750	0.18	0.85
3005401	3305456	0.977	-0.16	0.164	3003220	3303262	0.432	-0.28	1.54
3002110	3302172	0.886	0.23	0.787	3004721	3304704	1.000	** -1.00	0.0
3000407	3300471	0.318	-0.06	0.256	3003019	3303073	0.545	0.32	1.77
3004511	3304566	0.659	0.25	1.295	3000808	3300801	0.932	0.52	1.43
3005713	3305740	0.977	0.21	0.243	3000425	3300413	0.750	-0.30	1.43
3001411	3301438	0.386	-0.13	0.664	3002205	3302244	0.750	-0.12	0.53
3003424	3303422	0.955	0.24	0.487	3000918	3300948	0.682	0.43	* 2.21
3000912	3300960	0.773	-0.02	0.047	3002916	3302912	0.705	0.38	1.94
3005118	3305129	1.000	** -1.00	0.0	3005012	3305063	0.977	-0.79	1.23
3002805	3302823	0.932	0.54	1.484	3004322	3304324	0.636	0.32	1.65
3000206	3300237	0.818	-0.10	0.406	3000610	3300643	0.932	-0.58	1.57
3004410	3304458	0.864	0.16	0.588	3002824	3302851	0.455	0.06	0.30
3001813	3301874	0.955	-0.57	1.279	3002021	3302008	0.977	0.88	1.3
3002716	3302775	0.682	-0.20	1.025	3005818	3305836	0.705	0.03	0.12
3004210	3304226	0.841	0.17	0.673	3002614	3302627	0.977	0.63	0.95
3004821	3304845	0.977	0.81	1.280	3001418	3301430	0.932	0.20	0.49
3005512	3305535	0.977	-0.05	-0.034	3004023	3304041	0.750	0.28	1.35
3003912	3303947	0.545	0.07	0.334	3002519	3302503	1.000	** -1.00	0.0
3003112	3303180	0.386	-0.22	1.174	3005617	3305678	0.705	-0.06	0.27
3002312	3302306	0.386	0.06	0.312	3000217	3300225	0.045	-0.15	0.28
3003710	3303749	0.864	-0.32	1.207	3004913	3304967	1.000	** -1.00	0.0
3001706	3301776	0.955	0.74	1.681	3001109	3301139	0.864	0.14	0.49
3000503	3300511	0.932	0.16	0.377	3003313	3303307	0.682	0.28	1.44
3003805	3303869	1.000	** -1.00	0.0	3005409	3305459	0.750	0.09	0.37
3004614	3304615	0.477	-0.02	0.058	3001615	3301634	0.523	-0.22	1.18
3003205	3303264	0.614	0.49	* 2.600	3003517	3303561	0.773	-0.02	0.06
3001509	3301568	0.705	-0.20	0.962	3001824	3301865	0.136	-0.25	0.94
3005207	3305216	0.932	0.02	0.007	3001315	3301331	0.114	-0.28	0.96
3000317	3300310	0.864	0.55	2.099	3000516	3300517	0.114	-0.21	0.69
3004115	3304121	0.795	0.19	0.847	3000104	3300142	0.659	-0.26	1.33
3001313	3301355	0.500	0.32	1.809					

* Significant discrimination

** Zero discrimination

```
                                     POST-TEST ITEM RESPONSE ANALYSIS

                          NUMBER OF ITEMS=75
PRE
ITEM            ITEM RESPONSE                                  CONFIDENCE  RATINGS
NO.  POST                         0       1       2       3       4       5       6       7       8       9
     ITEM      FD      PC       FD      FD      FD      FD      FD      FD      FD      FD      FD      FD        CONFIDENCE
     I.D.                         PC      PC      PC      PC      PC      PC      PC      PC      PC      PC      NCOUNTS
  8
   3303307
         * A   30      68.2     0       0       0       0       1       0       4       5       9       8            27
                                  0.0     0.0     0.0     0.0     3.7     0.0    14.8    18.5    33.3    29.6

           B    0       0.0     0       0       0       0       0       0       0       0       0       0             0
                                  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0

           C    2       4.5     0       0       0       0       0       0       0       1       0       1             2
                                  0.0     0.0     0.0     0.0     0.0     0.0     0.0    50.0     0.0    50.0

           D   12      27.3     0       0       0       1       0       0       1       1       4       3            10
                                  0.0     0.0     0.0    10.0     0.0     0.0    10.0    10.0    40.0    30.0

     NCOUNTS   44               0       0       0       1       1       0       5       7      13      12            39
                                                        NON-RESPONDERS=   0

 19
   3302008
           A    1       2.3     0       0       0       0       0       0       0       0       0       1             1
                                  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0   100.0

         * B   43      97.7     0       0       0       1       0       1       5       5       9      17            38
                                  0.0     0.0     0.0     2.6     0.0     2.6    13.2    13.2    23.7    44.7

           C    0       0.0     0       0       0       0       0       0       0       0       0       0             0
                                  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0

           D    0       0.0     0       0       0       0       0       0       0       0       0       0             0
                                  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0

     NCOUNTS   44               0       0       0       1       0       1       5       5       9      18            39
                                                        NON-RESPONDERS=   0

 37
   3303709
           A    0       0.0     0       0       0       0       0       0       0       0       0       0             0
                                  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0

         * B   41      93.2     0       0       0       2       0       0       3       4      10      17            36
                                  0.0     0.0     0.0     5.6     0.0     0.0     8.3    11.1    27.8    47.2

           C    3       6.8     0       0       0       0       0       0       1       1       0       1             3
                                  0.0     0.0     0.0     0.0     0.0     0.0    33.3    33.3     0.0    33.3

           D    0       0.0     0       0       0       0       0       0       0       0       0       0             0
                                  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0

     NCOUNTS   44               0       0       0       2       0       0       4       5      10      18            39
                                                        NON-RESPONDERS=   0
```

SYNDACTIC TEXT FRAME ANALYSIS DATA

NO. M'n Taking this version 13

PART 2 SEGMENT 6

☐ Single volume

☒ 4-Volume

SUMMARY PRE-QUIZ 1

1	2
2	5
3	7
4	3
5	4
6	⧄

PROGRAMMED SEQUENCE 1
Taken by 6 M'n.

1	0	11	3	21	5	31		41		51	
2	2	12	6	22	0	32		42		52	
3	4	13	0	23	6	33		43			
4	1	14	0	24		34		44			
5	0	15	0	25		35		45			
6	0	16	3	26		36		46			
7	2	17	0	27		37		47			
8	0	18	4	28		38		48			
9	5	19	0	29		39		49			
10	0	20	0	30		40		50			

SUMMARY POST-QUIZ 1

3	0
5	0
4	1
2	1
1	0
	⧄

SUMMARY PRE-QUIZ 2

1	4
2	0
3	0
4	2
5	3
6	⧄

PROGRAMMED SEQUENCE 2
Taken by 6 M'n.

1	0	11	1	21		31		41	
2	0	12	0	22		32		42	
3	0	13	1	23		33		43	
4	0	14	0	24		34		44	
5	0	15	2	25		35		45	
6	0	16	2	26		36		46	
7	1	17	4	27		37			
8	2	18		28		38			
9	2	19		29		39			
10	2	20		30		40			

SUMMARY POST-QUIZ 2

3	2
1	0
5	0
4	0
2	0
	⧄

SUMMARY PRE-QUIZ 3

1	11
2	3
3	5
4	6
5	2
6	⧄

PROGRAMMED SEQUENCE 3
Taken by 9 M'n.

1	0	11	0	21	4	31	1	41	
2	0	12	0	22	1	32		42	
3	8	13	0	23	7	33		43	
4	1	14	4	24	8	34		44	
5	1	15	3	25	0	35		45	
6	1	16	1	26	3	36		46	
7	3	17	1	27	0	37		47	
8	0	18	3	28	2	38		48	
9	0	19	3	29	1	39		49	
10	0	20	0	30	6	40		50	

SUMMARY POST-QUIZ 3

2	3
4	1
5	1
1	0
3	0
	⧄

SUMMARY PRE-QUIZ 4

1	8
2	6
3	7
4	8
5	1
6	1

PROGRAMMED SEQUENCE 4
Taken by 8 M'n.

1	1	11	6	21		31		41		51	
2	2	12	1	22		32		42		52	
3	8	13	0	23		33		43		53	
4	0	14	4	24		34		44		54	
5	1	15	0	25		35		45		55	
6	0	16	0	26		36		46			
7	0	17	1	27		37		47			
8	2	18	2	28		38		48			
9	0	19	0	29		39		49			
10	1	20	0	30		40		50			

SUMMARY POST-QUIZ 4

3	5
4	5
2	1
1	2
6	0
5	0

SUMMARY PRE-QUIZ 5

1	
2	
3	
4	
5	
6	

PROGRAMMED SEQUENCE 5
Taken by __ M'n.

1		11		21	
2		12		22	
3		13		23	
4		14		24	
5		15		25	
6		16			
7		17			
8		18			
9		19			
10		20			

SUMMA POST-QU

TEST ITEM OBJECTIVE REFERENCE (ADMINISTRATIVE POSTTEST)

TEST ITEM ID	OBJECTIVE IC	PRETEST ITEM NO.	POSTTEST ITEM ID	NO. CORRECT RESPCASES	PER CENT CORRECT	TEST ITEM ID	OBJECTIVE ID	PRETEST ITEM NO.	PCSTTEST ITEM ID	NO. CORRECT RESPCNSES	PER CENT CORRECT
3000104	1000102	1	3300142	29	65.91	3004115	2034105	43	3304121	35	79.55
3000516	1000506	2	3300517	5	11.36	3000317	2030302	44	3300310	38	86.36
3001315	1001304	3	3301331	5	11.36	3005207	2025203	45	3305216	41	93.18
3001824	2031803	4	3301865	6	13.64	3001509	2051501	46	3301568	31	70.45
3003517	1003508	5	3303561	34	77.27	3003205	1003201	47	3303264	27	61.36
3001615	1001604	6	3301634	23	52.27	3004614	1004607	48	3304615	21	47.73
3005409	2025401	7	3305459	33	75.00	3003805	2023801	49	3303869	44	100.00
3003313	2063306	8	3303307	30	68.18	3000503	1000502	50	3300511	41	93.18
3001109	1001102	10	3301139	38	86.36	3001706	2011705	51	3301776	42	95.45
3004913	1004905	11	3304967	44	100.00	3003710	2053703	52	3303749	38	86.36
3000217	1000209	12	3300225	2	4.55	3002312	2032301	54	3302306	17	38.64
3005617	2045602	13	3305678	31	70.45	3003112	2023103	55	3303180	17	38.64
3002519	2042503	14	3302503	44	100.00	3003912	1003902	56	3303947	24	54.55
3004023	2074001	15	3304041	33	75.00	3005512	2035502	57	3305535	43	97.73
3001418	2061401	16	3301430	41	93.18	3004821	2084803	58	3304845	43	97.73
3002614	2052601	17	3302627	43	97.73	3004210	2034203	59	3304226	37	84.09
3005818	2035801	18	3305836	31	70.45	3002716	2042702	60	3302775	30	68.18
3002021	2062001	19	3302008	43	97.73	3001813	2021801	61	3301874	42	95.45
3002824	2102802	20	3302851	20	45.45	3004410	2034403	62	3304458	38	86.36
3000610	2020602	21	3300643	41	93.18	3000206	1000203	63	3300237	36	81.82
3004322	2064302	22	3304324	28	63.64	3002805	1002802	64	3302823	41	93.18
3005012	1005006	23	3305063	43	97.73	3005118	2075101	65	3305129	44	100.00
3002916	2072902	24	3302912	31	70.45	3000912	1000903	66	3300960	34	77.27
3000918	2040901	25	3300948	30	68.18	3003424	2063402	67	3303422	42	95.45
3002205	2012201	26	3302244	33	75.00	3001411	2041404	68	3301438	17	38.64
3000425	2060404	27	3300413	33	75.00	3005713	2025701	69	3305740	43	97.73
3000808	1000802	28	3300801	41	93.18	3004511	2064505	70	3304566	29	65.91
3003019	2053002	29	3303073	24	54.55	3000407	1000402	71	3300471	14	31.82
3004721	1004705	31	3304704	44	100.00	3002110	2032103	72	3302172	39	88.64
3003221	2053207	32	3303262	19	43.18	3005401	1005401	73	3305456	43	97.73
3003922	2043902	34	3303957	33	75.00	3000122	1000111	74	3300133	22	50.00
3005378	2015304	35	3305320	40	90.91	3001919	2041903	75	3301954	24	54.55
3004219	2074202	36	3304277	38	86.36	3001008	1001003	76	3301053	43	97.73
3003726	2133701	37	3303709	41	93.18	3003503	1003502	77	3303519	44	100.00
3004522	2124503	38	3304552	38	86.36	3005007	1005004	78	3305014	41	93.18
3002319	2042302	39	3302318	26	59.09	3001210	1001203	79	3301246	34	77.27
3005922	2035902	41	3305970	42	95.45	3003010	2033003	80	3303028	27	61.36
3001313	2031301	42	3301355	22	50.00						